

Richfield Dairy Supplemental Environmental Assessment  
Appendix of Comments

**Section 1:**

**Comments of Dana Lynn Hanaman, Esquire.**  
**Comments of Kestrel Management Services, LLC by Thomas P. Kunes, P.E.**  
**Comments of Pleasant Lake Management District by Jean MacCubbin, President**  
**Comments of Ms. Francie Rowe**  
**Comments of Sierra Club—John Muir Chapter by Shahla M. Werner**  
**Comments of Kenneth S. Wade, P.E., P.G..**  
**Comments of Ray J. White, Ph. D..**  
**Comments of McGillivray Westerberg & Bender LLC by Christa Westerberg, Esquire**  
**Comments of George J. Kraft, Ph.D., P.H.**  
**Comments of Michael Best & Friedrich LLP by David A. Crass, Esquire**

Section 2:

Additional Comments

Section 3:

Additional Comments

**From:** DLH [<mailto:manyrivers@gmail.com>]

**Sent:** Sunday, January 06, 2013 10:12 PM

**To:** Greve, Rachel M - DNR

**Cc:** Kafka, Terence - DNR; DNR SECRETARY; Ebersberger, Eric K - DNR; Sen.Lassa - LEGIS;  
[Rep.Krug@legis.wi.gov](mailto:Rep.Krug@legis.wi.gov)

**Subject:** Fwd: Property owner-residents' oppositional comments to supp. EA (dated 11/ re Richfield CAFO, HCapWell permit application (in Adam's County), associated with its proposed PDES permit #0064815-01-0

Wisconsin Department of Natural Resources  
Rachel Greve, DG/5;  
Bureau of Drinking Water and Groundwater  
Private Water Supply Section  
101 S. Webster St., Box 7921  
Madison WI 53707-7921

Dear Ms. Greve  
and our state representatives:

Having already delivered oral and written comments against this super-polluting and groundwater-sucking, proposed Richfield factory farm dairy CAFO (hereinafter "the CAFO") last July 2011, and also filing a Contested Case Petition against its illegal permitting last December 2011, I am hereby writing, yet again, to you to express our *extreme dissatisfaction* with the DNR's faulty, biased, non-thorough and/or incomplete environmental review process in this supposed supplemental environmental assessment, still to date, continuing after the CAFO's sudden new application, and its pending improper permitting of this detrimental CAFO. This new supplemental EA adds very little additional evidence of review and analysis than the original EA released 5/31/11, which is now moot, due to a Superior Court Judge Markson's over-rule of the original EA found lacking.

We, as long-time Pleasant Lake residents and property owners, share grave concerns (along with MANY other neighbors) over the now, very clearly, scientifically and concretely-documented significant harm and threats to the precious and pristine seepage Pleasant Lake upon which we live and recreate. We have continued to express these concerns and backed them up with scientific proof, but the DNR continues to outright REFUSE to analyze or acknowledge this CAFO's significant negative impact on Pleasant Lake, despite the July 2011 WI Supreme Court ruling in Buelah mandating DNR's **duty** to consider significant, negative impacts to surface waters by groundwater withdrawals, and despite the DNR itself acknowledging the CAFO's high cap wells' pumping as yet ANOTHER of many negative cumulative causation pumping impacts of over 400 mgd directly within 5 miles of Pleasant Lake. Pleasant Lake has an extremely public groundwater aquifer-dependent water quantity level, which has now been shown, via multiple scientific hydrogeology reports (already cited and submitted to the DNR\*\*, see below), to suffer, in particular, a very large future drawn down by this CAFO's proposed very proximate siting in Richfield, less than 2.5 miles away.

You, the DNR, readily admit in this Supp. EA that: "Modeling by Kraft and Mechenich (2010) shows an average water table drawdown of 1.5 feet at Pleasant Lake;...in last 10 years, ...within 5 miles of the proposed Richfield Dairy,...(alone, you have already freely permitted) SIX...agricultural irrigation wells with pump capacities of 400-1200 gpm; ... **it is expected that similar increases in groundwater withdrawal could continue in the future, (and finally, that) the**

**addition of the Richfield Dairy wells, or any additional water withdrawal in the area, will increase existing stresses on the availability of groundwater to supply surface water bodies.** However, when DNR determines whether or not to approve an application for a high capacity well, *DNR is limited* to considering whether the proposed well or wells on the high capacity property may cause significant adverse environmental impacts." (p. 6-7 of Supp. EA)

We would like to know where this invoked "limitation" came from, and/or how the DNR, particularly post-Buelah, via DOJ, has come to assert such BOGUS, politically-motivated "limitation?" **For the DNR to outright refuse to consider and review "cumulative impacts" in reviewing high cap well permits, utterly eviscerates ANY ability and DUTY of the DNR to actually do its legal, statutory job, and serve and act as steward of the public trust.** In that the majority of ground and surface waters are connected and do not operate in a vacuum of environmental individualism, such unsubstantiated declaration by the DNR that it may "not" consider this CAFO's application in conjunction with actual reality, and the reality of interconnected nearby negative impacts, is absolutely absurd, irrational, and/or a clear and patent abuse of discretion, given the DNR's very clear duty of environmental protection of public trust natural resources. This is especially the case and reality here, of this CAFO's super-groundwater-pumping's significant negative environmental impact on Pleasant Lake that at present only averages, by DNR's own admission, 15 feet in depth. Pleasant Lake is hardly a renewable public water resource, yet the DNR has specifically chosen, via its questionable, disingenuous, self-imposed "limited" internal environmental review policies, to do nothing to protect it, thereby flouting its WI constitutional duties. The DNR's liability is clear, in that it has utterly abused its discretion in pronouncing now, via this deficient supplemental EA, that the CAFO's high cap wells, while still seeking to be permitted at 72.5 mgd, will have no significant negative environmental impact on Pleasant Lake. In that regard, this supp. EA is, yet again, deficient and demonstrates that the DNR continues to choose to disregard public surface waters it is held to protect, failing to act legally, under governing common and statutory law, to properly assess, review and permit high cap wells.

We urge the DNR to do its job fully and *properly*, re-consider its deficient review, and thoroughly consider its cumulative/associated potentially harmful impacts to protect public waters of the state as is the DNR's duty, according to the recent Lake Buelah Supreme Court precedent, such that it does not abuse its discretion. We join in all comments to date and hereinafter submitted by the PLMD and/or Frances Rowe in relation to any of the Richfield CAFO's applications, in addition to these comments. Further, we also hereby formally bring our concerns to the greater attention of our state legislative representatives, including those in whose districts this CAFO is soliciting to operate (specifically, in the Richfield Township of Adams County), and request that they immediately also take action in terms of ensuring the safeguard of nearby private residential wells and highly threatened, extremely valuable nearby public waters like Pleasant Lake, which generate much tourism economic dollars and recreation opportunities (swimming, boating, fishing, hunting) in their districts which are irreplaceable. **It is all of your responsibilities to ensure that local public**

**waters, particularly those most immediately threatened by the proposed CAFO site, like Pleasant Lake, are not harmed.**

If you allow Pleasant Lake to be severely drawn down by the illegal permitting of yet another 6K+ cow Milk Source CAFO, much like the other horrible one already operating just 10 miles to the South which **has already destroyed the adjacent public surface water of Patrick Lake and local Grand Marsh area**, there is no getting Pleasant Lake back. It will be impossible to reverse or turn back the devastation of this CAFO if it is allowed to be improperly sited in Richfield to our detriment. Please address these concerns and respond in writing. We continue NOT to be dissuaded and intend to do *whatever* is legally necessary to defeat this, yet another, irresponsible, uncaring, mega-corporation, attempting to illegally take over and destroy our precious natural resources and waters without even any financial liability, and only ridiculously being required to pay \$125/year for such extreme water use. We will continue to fight to protect Pleasant Lake, but also the whole surrounding WI Central Sands area from the expanding, irresponsible, deregulated, DNR-rubber stamped, "Open for Business" development which most certainly doesn't benefit WI residential property owners and individuals, but rather only benefits the big corporate farms in question. We will NOT allow these mega-agriculture operations to continue to rape and pillage our precious natural resources like Pleasant Lake for FREE, and even more atrociously, via our public subsidy that they have most definitely stolen from us.

**As long-standing resident, tax-paying, law-abiding, property-owning Wisconsin citizens within 2.5 miles of this proposed factory farm CAFO, we are thoroughly disturbed by its ominousness. Our families have long recreated and lived on Pleasant Lake and want, intend and have the RIGHT to do so for many generations to come. We have matured together here, seen our children grow up together swimming, skiing, diving, sailing, fishing and even working (right on the Lake) here, and continue to drink and depend on our clean private well waters to sustain ourselves. I myself worked right on the Lake at the former, historic Sunset Point Resort, in my very first job.**

Very unfortunately, we have *already* witnessed and directly experienced the horrible effects of a severely lowered Pleasant Lake level, not being able to swim off or ski from around our piers because the water is already too shallow now. When I was young, being under five feet, I could not stand whatsoever at the end of our pier; now, I am lucky if the water comes up to my knee, **DESPITE** having extended our pier *much* farther out into the Lake many years ago due to the ever lower Lake. Each year we have to keep extending our pier further so that our pontoon boat is not resting on the sand, and we have some water to wade in, at least.

Therefore, this supp. EA is deficient and the DNR must do something **MORE** to prevent the loss of this precious public water altogether (due to continued, unregulated high cap well permitting and operation which has and continues to lower and dry up lakes and streams), including specifically, reversing its unsubstantiated finding of "no significant adverse impact", performance of an EIS, and the denial of this high cap well permit for this devastating CAFO less than 2.5 miles away. Given the acknowledged average depth of only 15 feet of Pleasant Lake, it is abundantly clear that an average draw down of 1.5 feet, to be caused in heavy part by this CAFO's high cap well permitting, will completely decimate it.

There is no question about the continued lower Pleasant Lake levels to come, that will occur, in grand part, as a result of any permitting of this CAFO, as documented. This means: silt on the beaches from boats stirring up the bottom due to shallow water, disruption of the fishery due to boats running over the sand point in shallow water where bluegills nest, NO Lake whatsoever to look at from our house as we have for years as long as I can remember/every year of my life, no friends visiting/staying as they have at the Lake for years, and sunsets that are no longer over any water. Lowered or absent lake levels mean no continued swimming as I have my entire life across the Lake, no paddleboating, no pontooning with friends, and no further Lake recreating in general, because no motorized crafts nor us as humans, will be able to proceed through low water or water that is not there. This Richfield CAFO EQUALS lowered Pleasant Lake levels, if not the all out drying up of Pleasant Lake, which in turns means total loss of recreation, enjoyment here, not to mention the plummeting of our private property values, which the DNR and Milk Source would be jointly responsible for, and whom we would hold liable. Protection of this immediate public water is the duty of the DNR, and therefore, it can NOT legally permit the high cap well's this CAFO seeks in Richfield. By allowing the CAFO wells to proceed, and this supp. EA to stand as is, the DNR will directly allow the further devastation of Pleasant Lake's water quantity, not to mention quality, and the all-out ruining of the whole pristine area's clean, rural green space, recreational opportunities in the surrounding 3 mile radius, due to the awful 6000+ cows' manure stench (with nothing preventing 3000+ more cows in future years), heavy load traffic noise and pollution, and overall development that WILL necessarily occur.

I, and my immediate family and neighbors, feel very alienated/ignored, disrespected/disregarded and disturbed/disappointed by the DNR EA's clearly erroneous and unsubstantiated claims of "no harm" and "no impact" to the public waters very close by the proposed CAFO livestock factory (particularly Pleasant Lake, where we live and work). We are also quite abhorred at the incomplete review by the DNR of Milk Source's application, and expect the DNR to (1) DENY its permit application, or in the very least (2) mandate alternate, more natural resource-protecting and responsible re-siting of this CAFO deeper West into Adams County, and/or (3) now complete the EIS which should have begun a long time ago as required (under WEPA/DNR standards of "significant impact(s) and/or unique, never before considered conditions/circumstances (i.e. the Central sandy, pourous soil topography of the area).

At present, the DNR's EA is severely lacking in the area of the immediate surrounding waters' quantity and quality protection, evidencing glaring omissions in its summary conclusions, as already documented.\*\* The EA fails to address the change in HCW operation purpose from irrigation which returns water to the ground, to cattle sustenance/maintenance which returns virtually none. It also all out fails to do or incorporate proper, accurate and current groundwater modelling analysis which shows at least 2 foot draw down to Pleasant Lake within EIGHT years!\*\*\* Any and all other additional requirements necessary to achieve and MAINTAIN water quantity protection standards for Pleasant Lake, in particular, under the public trust doctrine, should be analyzed, and in the very least, set as conditions to any permits. The groundwater maps

being relied upon in the DNR's analysis are now over 30 years old and a DNR representative him/herself has acknowledged that these maps/modelling can no longer be accurate given the addition of 800+ high capacity wells in Waushara County alone since then, and because of ever-changing groundwater flows and other geological boundaries and drawdowns in the vicinity surrounding the proposed CAFO.

An EIS must be completed/documentated to assure that the DNR's environmental cumulative impacts review is reflective and consistent with WEPA as required, including consideration of the "(cumulative) impacts of repeated actions of this same type" because they "can (EASILY) be anticipated" in Adams County with effects extending necessarily to the immediate adjacent Waushara County, particularly 2.5 miles SouthEast into Waushara where Pleasant Lake is located, as the presently proposed CAFO site is located precisely on this county line. NR 150.22(2)a(2). The DNR is required to base its analyses on up-to-date information and accurate, long term modelling, and especially because these have now been provided by respected scientists, they must do so, or their any permitting of this CAFO *will be illegal* and met with further intense and unflattering litigation.

The DNR is Wisconsin's environmental resource steward and is obligated to protect public waters (especially from big business' pollution and lack of accountability for their destruction). If the DNR refuses to be the steward of natural resources, as is its mission, WHO will be? and WHAT, pray tell, has this State and its supposed "democratic government" come to?? The 50 jobs claimed to be created by this CAFO, with at least half of them assuredly being pitiful, minimum wage labor positions most likely going to non-citizens and not even local residents, is not worth much, and NO WHERE NEAR JUSTIFICATION TO DEVASTATE SURROUNDING PUBLIC WATERS, ESPECIALLY NOT PLEASANT LAKE. Where is the environmental pre-tax on these corporations that only want to take, and take, and take?? They instead get tax-BREAKS and a free pass because they certainly can't re-fill a Lake now will or can they?

We appreciate your *thorough* review and incorporation of these oppositional comments in a timely fashion and your continued improved review process. Ultimately, we request that you DENY this CAFO's permits altogether, or in the very least deny permitting now *at this site (and mandate a different one)* due to the extreme potential well-documented harms to the immediate public waters of Wisconsin, and complete an EIS before any other permitting can proceed. **We will hold the WI DNR accountable and encourage you, who are supposed to be representing us, to do your jobs and do so as well.** Thank you very much.

Sincerely,

Dana Lynn Hanaman, Esq.  
on behalf of our Hanaman Family (as 20+ year property owners),  
and our neighbors, the Jongerius and Sundeen families

W13388 Czech Dr.

Pleasant Lake  
Coloma, WI 54930

\*\*\* "The aquifer is not of infinite areal extent. Over long periods of pumping the system will be significantly affected by boundary conditions not represented in the model which will cause the simulation to be unrealistic. The simulations cannot produce a realistic steady state solution because the cone of depression continues to expand infinitely. Since the proposed pumping wells are expected to be in use for many years the impact of longer pumping can be evaluated with the same models using the same aquifer data.

Increasing the pumping period from 300 days to 3000 days (8.2 years) produces a Jacob drawdown result showing drawdown increasing to approximately ... **2.0 feet at 10,000 feet** (*or approximately 2 miles*)."

---from Hydrogeologist Ken Wade's report; see also George Kraft's scientific report, as already submitted to the DNR in opposition to this CAFO

**(So this can be extrapolated to Pleasant Lake experiencing at least an approximate 2 foot loss, located about 2.4 miles away, within eight years, and not figuring for real boundary conditions and more geological water drawdown contributing factors!)**



January 6, 2013

Ms Rachel Greve, DG/5  
Wisconsin Department of Natural Resources  
101 S. Webster Street  
P.O. Box 7921  
Madison, WI 53707-7921

Regarding: Comments on DNR's Supplemental EA for Richfield Dairy's Proposal for High-Capacity Wells

Dear Ms Greve,

I am writing this letter to express my concerns about WDNR's work on the Supplemental EA for Richfield Dairy's proposal for high capacity wells, related to their anticipated impact on groundwater receptors such as the many trout streams, wetlands, springs and lakes, namely Pleasant Lake and Lake Burnita.

The Supplemental EA lacks technical and professional basis. For example, regarding impact on Pleasant Lake, the discussion by DNR reviewers appears to be based on generalized information rather than specific data and analysis. The statement that the "expected change in groundwater input is small enough that no measurable changes to lake chemistry or clarity are expected". This statement represents significant speculation without technical basis. I am familiar with the water quality and lake levels in Pleasant Lake. Reduction of lake levels due to additional high capacity well pumping will expose more shoreline and silt sediments in shallow bays to disturbance which in turn will bring about changes in vegetation and water chemistry (e.g. nitrogen and phosphorous, both contributors to eutrophication of surface water bodies).

Additionally, the Supplemental EA is contradictory from section to section. In the discussion about Cumulative Impacts, the case is presented rationally regarding the significant impact that will result from cumulative effects of the growing number of high capacity wells nearby within five miles of the proposed Dairy. DNR states that "the addition of the Richfield Dairy wells, or any additional water withdrawal in the area, will increase existing stresses on the availability of groundwater to supply surface water bodies". Then, later in that section DNR states that "when DNR determines whether or not to approve an application for a high capacity well, DNR is limited to considering whether the proposed well or wells on the high capacity property may cause significant adverse environmental impacts". Is this what the Legislature and state citizens should expect from WDNR regarding the Protection of Waters of the State?





The science of hydrogeology (groundwater capacity, flow and quality) irrefutably recognizes cross-property, regional interactions regarding both flow and quality. Consideration of only the on-property impacts of a high cap well defies science and will not serve to protect the waters of the state.

Important precedent was long ago established regarding regulation of impact on groundwater beyond property lines. In DNR's regulation of solid waste landfills, for example, maximum contaminant levels of chemical constituents of concern in the groundwater are set at property lines and beyond to prevent significant impact on the adjacent and surrounding properties. The primary way these contaminants can travel from the groundwater of the landfill property to the groundwater under adjacent or surrounding properties is via groundwater flow. For landfills, DNR is not limited to the evaluation or protection of groundwater only beneath the landfill property boundaries.

As further evidence of DNR's contradictory analysis, the cumulative impact on waters of the state beyond the Dairy property is discussed (and certainly can be classified as significant); then DNR claims it can't consider cumulative impact beyond the Dairy property; then DNR finishes the discussion by listing DNR decision alternatives, including "deny the application for high capacity well(s) based on probable significant adverse environmental impacts to waters of the state that cannot be avoided by placing conditions on the construction or use of the well(s)". DNR goes on to select an alternative that only requires water level monitoring, even though the models used by various experts predicts impact that can be considered significant to the waters of the state.

In my opinion, the conclusions reached by the DNR in the Supplemental EA are neither technically sound nor based on good professional practice. Protection of the Waters of the State requires better work by our state's primary environmental protection agency.

The basis for my comments includes 35 years of environmental engineering consulting, preceded by nearly 7 years in the WDNR's Solid Waste Management program. I have BS and MS degrees from the UW-Madison Department of Civil and Environmental Engineering where I now serve that Department as a member of the Adjunct Faculty. In the early 1980s, I served on the Wisconsin Legislative Council Special Committee on Groundwater Quality which developed the framework and technical basis for pioneering legislation that was passed to protect groundwater quality in the state.

I hope that my comments are helpful as you reconsider the Richfield Dairy wells.

Sincerely,

Thomas P. Kunes, PE, Principal



RECEIVED-DNR

JAN 07 2013

DRINKING WATER & GW

Pleasant Lake Management District

P.O. Box 230, Coloma, Wisconsin 54930

January 4, 2013

Via E-Mail and U.S. Mail

Ms. Rachel Greve, DG/5  
Wisconsin Department of Natural Resources  
101 S. Webster St.  
P.O. Box 7921  
Madison, WI 53707-7921

RE: Comments on Supplemental Environmental Assessment  
Richfield Dairy

Dear Ms. Greve:

Please accept this letter and referenced and enclosed materials as the comments of the Pleasant Lake Management District ("PLMD") regarding the "Richfield Dairy High Capacity Well Supplemental Environmental Assessment – 72.5 MGY," undated but issued on or about November 27, 2012 (hereinafter "Supplemental EA"). PLMD believes that the Supplemental EA is inadequate, inaccurate, internally inconsistent, and does not satisfy the Department of Natural Resources' ("DNR") obligations under the Wisconsin Environmental Policy Act ("WEPA"), Wis. Stat. § 1.11(2)(c) and associated regulations in Wis. Admin. Code ch. NR 150. Additionally, the Supplemental EA fails to provide the minimally required information that must be collected and evaluated by DNR and disclosed to inform the public; and that document therefore must be revised and reissued for public comment.

In addition to and support of PLMD's comments, we are enclosing several documents:

1. A letter from Dr. George Kraft, a professor at the University of Wisconsin-Stevens Point and authority on ground and surface water hydrology and modeling in the Central Sands area of Wisconsin, dated October 9, 2012. Those comments focus on the modeling performed by S.S. Papadopoulos & Associates ("SSPA") on behalf of Richfield Dairy.
2. A letter from Dr. Kraft on DNR's prior determination that withdrawal of 131.2 million gallons per year ("mgy") would not cause significant impacts, dated November 28, 2011.
3. A report from Dr. Kraft and others entitled "Information Support for Groundwater Management in the Wisconsin Central Sands, 2009-2011," dated October 1, 2012.
4. A letter from Dr. Kraft including his comments on the Supplemental EA, dated January 2, 2013.

5. The deposition transcript of Tim Asplund, dated June 4, 2012.
6. The deposition transcript of Rachel Greve, dated June 4, 2012.
7. Barlow, P. M. and Leake, S. A. 2012, *Streamflow Depletion by Wells – Understanding and Managing the Effects of Groundwater Pumping on Streamflow*, USGS Circular 1376.

### **Background to Comments**

The Supplemental EA has been prepared because of deficiencies identified by the Circuit Court for Dane County in July 2012. The court held that DNR had not adequately evaluated the impacts associated with the proposed high capacity wells at the pumping rate approved by DNR, and remanded the matter for further evaluation. Specifically, the court criticized DNR for approving the wells with a pumping rate of 131.2 mgy, based on an evaluation of impacts at 52.5 mgy.

Subsequent to the court's decision, Richfield Dairy submitted an amended application, requesting that the wells be approved with an initial pumping rate of 72.5 mgy. Richfield Dairy also submitted a report from SSPA, which included, *inter alia*, revised groundwater modeling of the expected impacts of the wells on Pleasant Lake and certain other resources at the proposed pumping rate.

The Supplemental EA is an 8+ page document generally describing the history of the permit and WEPA process; the SSPA report; environmental impacts expected by DNR; a very brief discussion of alternatives (deny, approve, approve with conditions); and proposed conditions of approval.

### **General Comments**

1. The Supplemental EA does not satisfy the minimum requirements of WEPA, and does not even suggest that DNR conducted any independent evaluation of impacts. Under Wis. Admin. Code § NR 150.22(2), DNR is required to evaluate and disclose, *inter alia*, short-term, long-term, secondary, and cumulative effects, precedential effects on future actions, the degree of controversy, and alternatives. These information disclosures are required to inform the public of the expected impacts, and to allow the public to critique DNR's analysis. This document, however, is extremely cursory and provides almost no substantive information. For example:
  - a. The discussion of wetlands consists of two sentences. It does not specifically identify any wetlands, the basis for its conclusion that the expected drawdown would be less than one inch, or how or why DNR concluded that a one-inch drawdown for those affected resources would not be significant. There is no discussion of an Index of Biological Integrity being completed for the Turtle Bay wetland.
  - b. Discussions of springs and streams are somewhat longer. However, the discussions are limited to noting the modeled expected reductions in flow, and offer no information about the resulting impacts on those water bodies or why DNR believes that they would not be significant. No mention is made of the pirate perch, a Wisconsin Species of Special Concern, known to be living in the Little Roche-A-Cri, a stream the DNR



acknowledges will experience stream flow reduction of 43 gallons per minute as result of the aquifer drawdown created by the Richfield high capacity wells.

- c. The discussion of Pleasant Lake similarly focuses on the applicant's modeled drawdown and provides literally no data regarding the ecology of the lake or the effects of modeled drawdown on the lake.
2. The Supplemental EA repeatedly asserts that no significant environment impacts will result from the permitting of the Richfield Dairy high capacity wells, but fails to define "significant environmental impact" in this context. It also does not identify the criteria that were used to draw this conclusion. There is no description of what a significant environmental impact would be for any affected lake, river, wetland, or stream in the region. This is particularly relevant because Mr. Asplund previously testified in his deposition (attached), as a water resources manager, that he does not know what would make an impact significant, and that there were numerous factors that he would consider as part of an impact analysis. Additionally, as Dr. Kraft observed in his comments on the Supplemental EA (attached), DNR apparently has not considered whether the added impact of the next two inches of drawdown has a significant impact on an already stressed resource.
3. The Supplemental EA only addresses Richfield Dairy's requested initial pumping rate. Neither SSPA nor DNR has assessed the impact of increased pumping rates from these wells in the future. DNR should expect that there will be increased pumping from these wells based on history. Richfield Dairy previously worked with DNR, privately and without public disclosure, to arrive at an approved pumping rate of 131.2 mgd, an amount not disclosed for public comment. Based on Dr. Kraft's calculations, this would have resulted in a 5.6-inch drawdown of Pleasant Lake and seriously depleted flow in nearby ERW and ORW streams. Extrapolating from SSPA's more recent modeling, the drawdown would be over 3 inches; yet the impacts of this pumping rate still have not been evaluated. At the proposed well pumping capacity of 525 mgd, the drawdown at Pleasant Lake would be over one foot. It is apparent that Richfield Dairy has asked for 72.5 mgd based on its modeling of a drawdown previously considered acceptable by DNR, knowing that it can request increases in the pumping rates in the future without any public notice or scrutiny. In her deposition (attached), Ms. Greve deposition notes that the amount of pumping will impact surface water resources, yet the Supplemental EA does not discuss this impact.
4. The discussion of cumulative impacts does not include any independent evaluation. It merely identifies other wells in the vicinity of Richfield Dairy, reiterates information in the Kraft and Mechenich 2010 report and the SSPA report, and then acknowledges that the Richfield Dairy wells will increase existing stresses by decreasing flow (streams) and water levels (lakes) and increasing water temperature. The Supplemental EA states that DNR evaluated these cumulative effects, but that evaluation is not disclosed in the document.
5. The cumulative impacts section does not disclose whether DNR expects the cumulative impacts to be significant. While acknowledging that cumulative impacts will occur, DNR does not evaluate them. Rather, DNR asserts that it is limited to reviewing only the impacts of the proposed wells and, on that basis, expects that the impacts will not be significant.

6. The cumulative impacts discussion also fails to disclose whether DNR evaluated reasonable foreseeable future actions that may compound the impacts, as required by Wis. Admin. Code § NR 150.22(2)(a)2. It correctly observes that the SSPA report only modeled the impacts of the two proposed wells and other existing irrigation wells in the vicinity of the proposed wells. There is no evaluation or discussion of expected future additional wells or increased pumping from existing wells in the watershed, or increased pumping from the two Richfield Dairy wells. While the Supplemental EA states that DNR has approved seven new wells within five miles of the proposed Dairy in the last 10 years, it does not identify how many wells have been added in the vicinity of affected resources, or how many wells have had increased pumping rates. In fact, for the first ten months of 2012, there have been 35 wells approved in Adams County and 51 wells approved in Waushara County. Plainly, DNR must expect and therefore should evaluate future applications for new or increased pumping rates.
7. PLMD does not agree with DNR's statement of its authority to consider cumulative impacts in its decision on the well under Wis. Stat. ch. 281, which we understand has been developed while the initial application for these wells was pending. Irrespective of its authority under ch. 281, DNR has improperly conflated its obligations under WEPA with its decision-making authority. Even if DNR were correct in the statement of its chapter 281 authority, that authority would not limit its obligation to evaluate and assess the severity of cumulative impacts. The conclusion that an EIS is not necessary, based solely on the expected impacts of the two wells at the initial pumping rate of 72.5 mgd, is flawed as a matter of law.
8. There are factual inconsistencies and likely inaccuracies in the Supplemental EA. For example, that document states that the maximum depth of Pleasant Lake is 23.7 feet, while DNR's web page reports 30 feet. The document at page 4 asserts a 5.5-foot variation in lake level since 2004, but a Waushara County report calculates the variation as 5.32 feet. SSPA's calculations are based on an assumed surface area of 130 acres, DNR's web site identifies Pleasant Lake as 120 acres, and the Supplemental EA uses an imprecise range of 129-135 acres.
9. Throughout the document, DNR uses vague terminology, characterizing the impacts from the wells as "unexpected" or "unlikely" to be significant. It also discusses impacts on springs and streams by comparing them to "generally" or "typically" observed conditions, reflecting a lack of any evaluation specific to the impacted springs and streams. This terminology reinforces the apparent incomplete, imprecise and ineffective review and lack of alternatives analysis.

### **Specific Comments**

1. Specific critiques of the SSPA report and modeling and the Supplemental EA, by Dr. Kraft, are attached to this letter. In connection with Dr. Kraft's reports, we would like to highlight the following:
  - a. DNR's decision to limit its analysis to the first twenty-five years of impact as the "long-term" impact is inappropriate. As discussed in greater detail in Dr. Kraft's report, the drawdowns and flow reductions associated with the Richfield Dairy wells will not have reached an equilibrium state in twenty-five years.



- b. The comparison of the impacts of these wells to “natural fluctuations” in water level or flow is inappropriate. The effect of the wells for Richfield Dairy’s planned use is a permanent decline in water levels, both seasonally and longer term. While the existing biota of a lake or stream are adapted to any natural fluctuations, the Supplemental EA identifies no information that suggests that they would similarly adapt to a permanent reduction in water level or flow.
  - c. DNR manipulates and distorts the documented evidence of fluctuations in stream and particularly lake levels, evidencing a bias to downplay the significance of these and other high capacity wells in the Central Sands.
    - i. DNR relies heavily on a 1964 low water datum to support the conclusions that there are large natural water level fluctuations in Pleasant Lake levels. However, the 1964 datum was obtained during a particularly water-stressed year, the last in a particularly long drought period. It is the single data point that exists until 1973. Accordingly, the 1964 value is an outlier that has little significance in characterizing a representative range of water levels.
    - ii. There is little evidence presented to support the claim of “natural” seasonal and annual fluctuations for Pleasant Lake. Seasonal fluctuations cannot be well quantified because for most years, there are no data or only one data point. Since 1993, the data show a clear trend of declining water level, as opposed to simple fluctuation, which correlates with the increase in number of nearby high capacity wells and withdrawal from those wells. Other lakes and streams in the Central Sands region near high capacity wells similarly have experienced unnatural declines in water levels or flow.
  - d. Although Dr. Kraft’s November 28, 2011 report was submitted to the DNR on December 3, 2011, no mention is made of it in the Supplemental EA. This is a significant omission, as this work supports the statement made by Ms. Greve during her deposition (attached) that there is a general linear correlation between pumping rate and resource drawdown.
2. Wetlands: The discussion of wetlands is limited to two sentences, and the finding of no significant impact appears to rest entirely on the modeled drawdown on one wetland after 25 years. There is no inventory of affected wetlands – even the noted wetland is not identified. Additionally, there is no evaluation or discussion of why the expected impact is not significant. There is no description of the ecology of any wetlands, or how the projected one-inch drawdown will affect local biota. For example, if there are areas of the wetland that are only 2-3 inches deep during times of the year and are sensitive to indigenous species, a one-inch permanent decline may have a very significant impact.

No mention is made of Pleasant Lake’s attached and nearby wetlands, their biota, or the role they play in maintaining the lake’s fishery, biological diversity, water chemistry, and water temperature. As discussed below, we know that there are wetlands adjacent to Pleasant Lake that are very shallow but support important species.

The public simply has no way of knowing whether DNR conducted any investigation or evaluation of any wetlands in the watershed or vicinity of the proposed Richfield Dairy wells.

3. Springs: The paragraph on springs is similarly devoid of supporting information. It describes only one spring, at the headwaters of Chaffee Creek, a Class I and II trout stream and both an Exceptional Resource Water (Waushara County) and an Outstanding Resource Water (Marquette County). It notes the remarkable information that the flow of that spring has been reduced by nearly 50% over time, and it is noteworthy that the 1963 measurement was during a series of drought years. That is, the reduction from natural flow conditions may have been significantly greater.

As with wetlands, DNR's only evaluation of impacts appears to be its review of the SSPA report, which calculated about a 5% reduction at Chaffee Creek at gaging station 1. This discussion is inadequate for at least the following reasons (in addition to the pertinent comments by Dr. Kraft about the selected locations for calculating impacts):

- a. The calculated impact is inconsistent with DNR's suggestion that the spring is outside the area of influence, based on "general" information about contribution areas.
  - b. The most recent stated datum is already nearly ten years old, and one can expect that the increase in water withdrawals in the intervening years has further reduced spring flow. The age of this datum makes it impossible to calculate the anticipated impact on Chaffee Creek, although it suggests that the impact would be greater than 5%.
  - c. The discussion ignores other springs in the vicinity of Richfield Dairy. Pleasant Lake, only 2.5 miles away, is a spring-fed lake with substantial springs in Turtle Bay and on the northwest shoreline. It appears that DNR did not evaluate those springs or the associated impact from the proposed Richfield Dairy wells.
  - d. It also appears that DNR performed no evaluation on springs feeding other nearby lakes and streams. For example, DNR observes that the headwaters of Little Roche a Cri Creek, a Class I and II trout stream and Exceptional Resource Water, is 2.5-2.9 miles away; yet there is no indication that DNR investigated or evaluated the impact on springs feeding that stream.
4. Streams: DNR's discussion of streams suffers from the same dearth of relevant information as in its discussion of springs. While it bases its conclusion that the impact is "unlikely" to be significant on a calculated percentage loss of stream flow, DNR does not identify the age, location, or accuracy of the data. Additionally, as discussed by Dr. Kraft, DNR's and SSPA's mathematical calculations are based on gauging station data at areas of higher flow, and not the most stressed reaches of the affected streams.

DNR reiterates SSPA's calculated maximum flow reduction at Little Roche a Cri of 3.4%, but it concludes that this impact is unlikely to be significant because sensitive streams do not "typically" experience changes in fish population at less than 4%. That is, there is no discussion – and presumably has been no evaluation – of the impact of a 3.4% loss at this particular stream, which is already stressed due to the recent history of regional pumping. Moreover, if pumping from other wells has caused even a 0.6% loss of stream flow (likely



much higher), the effect of the added Richfield Dairy wells would, by DNR's measure, risk significant impacts to this ERW trout stream.

5. Pleasant Lake: The Supplemental EA devotes more attention to Pleasant Lake than any other resource, perhaps because the PLMD has litigated the last EA. However, that discussion is also deficient or inaccurate in numerous respects, including the following:
  - a. As noted above, the discussion of surface area and depth is inconsistent and may be inaccurate.
  - b. As also discussed above, DNR's discussion of historical water level fluctuations are misleading. The last 20 years of data show a trend of substantial decline in water levels, which those who have studied the lake and nearby lakes attribute largely to virtually unconstrained groundwater pumping. Additionally, there are only four years with more than one data point; and the two data points for 2011 and five data points for 2012 show a trend of declining water levels (except that 10/16/12 is < 1 inch higher than on 8/27/12).
  - c. DNR's misleading presentation leads to flawed conclusions. The Supplemental EA states: "Emergent vegetation and submerged species in the nearshore zone are likely limited due to historical water level fluctuations and shoreland development ...." Use of the term "likely" indicates that DNR has conducted no reconnaissance or investigation of actual nearshore biota. Had it done so, it would have learned that there are significant flora and fauna in the nearshore zone, particularly in the vicinity of Turtle Bay.
  - d. DNR states that "Pleasant Lake currently supports little emergent vegetation that would be most susceptible to small changes in water levels." From this statement, DNR then concludes that the drawdown would not impact the fishery or aquatic wildlife. This statement is demonstrably false. In fact, the nearshore zone in Turtle Bay supports a population of banded killifish, an important "State Special Concern" fish. The spawning area for this species is very shallow water, including the shallow connection between the bay and adjacent wetlands. Moreover, the spawning season for killifish is summer, when one would expect water levels to be at their lowest if there are seasonal fluctuations. A reduction of 1.6+ inches could destroy this population.
  - e. There are other impacts ignored by DNR. These include the fact that the calculated reduction would cut off Turtle Bay from adjacent wetlands, which provide important habitat for water-dependent upland species (e.g., frogs), and sediment filtration for the lake. It is apparent that DNR has not inventoried either plants or wildlife in this area, yet another shortfall in its cursory evaluation for the new pumping rate.
6. Other lakes: The Supplemental EA provides even less information for any other lake. For Lake Burnita, it reports a modeled water level drawdown of 2.2-2.7%, apparently based on water level information that is 50 years old. There is literally no discussion of the ecology of the lake, any more recent information, or the effects of this drawdown on the lake ecology. Additionally, DNR apparently has ignored any other lakes that may be impacted, or any impacts at a pumping rate greater than the initial proposed pumping rate of 72.5 mgd.



7. Cumulative impacts: Beginning on page 6, DNR describes how agricultural pumping of groundwater has impacted the waters of the state in the Central Sands. It notes that there are 90 high capacity wells within four miles of the requested new high capacity wells and that seven of those wells have been approved in the last ten years. The EA goes on to state: "Groundwater modeling and observations of various water bodies indicates that a reduction in water quantity has occurred due to the high volume of irrigation and other water withdrawals in the Central Sand region of the state." The EA also states:

The addition of the Richfield Dairy wells, or any additional water withdrawal in the area, will increase existing stresses on the availability of groundwater to supply surface water bodies. The effects of this type of cumulative reduction in groundwater availability include decreased flow and increased temperature in headwater streams, and lowered lake levels in nearby lakes (such as Pleasant Lake).

These statements are both understatements and indicative of a larger problem. Long Lake was mostly dry due to pumping in 2006-2009, and now has only a few feet of water. The Little Plover River was dry in stretches from 2005-2009 and has been below the public rights stage and historical low flows through most of the recent past. Multiple other surface waters are currently low-water impaired: Wolf Lake (where the public beach has been unusable for a decade), Lake Huron, Pleasant Lake, Patrick Lake, the Little Roche a Cri, and Tagatz Creek, to name just a few. The summer of 2012 saw dramatic flow declines, to the point of drying, in Central Sands irrigated-area headwater streams. Hydrologists know, and so should the DNR, that individual wells may have little effect on lake levels, stream flow, or wetlands, but that pumping within a basin by many wells combines to produce substantial effects on surface resources and aquatic habitats. See Barlow & Leake, 2012 (attached).

Despite these acknowledgements and existing conditions on numerous water bodies in the Central Sands, DNR concludes that the proposed wells are "not anticipated to result in significant adverse environmental effects ...." DNR reaches this conclusion by first stating that it is limited to considering only the wells on the specific property where new wells are proposed, and then only at the initial proposed pumping rate.

DNR is wrong on both counts. First, it has conflated its duty under WEPA with its newly created interpretation of its authority under Wis. Stat. ch. 281. Irrespective of whether DNR can or should limit its attention to the individual well or well property when deciding whether to approve a new well, the well statute does not limit its duty to determine whether impacts are significant under WEPA. That is, DNR must prepare an EIS if the project is expected to have significant impacts, as the scope of inquiry is defined under WEPA and Wis. Admin. Code ch. NR 150.

Additionally, there is nothing in Wis. Stat. ch. 281 or Wis. Admin. Code ch. NR 150 that limits DNR's inquiry to the proposed initial pumping rate. On the contrary, an increased pumping rate plainly is a reasonably anticipated compounding condition that must be evaluated under § NR 150.22(2)(a)2., unless the conditions of approval are going to include a prohibition on ever increasing the pumping rate. That evaluation is more critical here, because: a) Richfield Dairy has previously requested a higher pumping rate and is likely to do so in the future; b) Richfield Dairy's affiliate, Milk Source, LLC, requested increased pumping at New Chester only \_\_\_ months after its original permit was issued, based on the business plan to increase the number of animal units at its facilities; c) there is no requirement for WEPA review for increased water withdrawals; and d) there is no public notice or review of a high capacity well application for an increased pumping rate.

The history of this project already bears out the conclusion that Richfield Dairy will request an increased pumping rate. Its planed high capacity wells will have the capacity to pump 525 mgy. It originally requested 52.5 mgy (10% of capacity); then negotiated with DNR outside of the public eye for 131.2 mgy; and now is now requesting 72.5.

8. Alternatives analysis: Under Wis. Admin. Code § NR 150.22(2)(e), the EA must include “a rigorous exploration and objective evaluation of the environmental impacts of all reasonable alternatives, particularly those that might avoid all or some of the adverse environmental effects of the proposed action.” The Supplemental EA merely lists three alternatives as bullet points: deny, approve, or approve with conditions. That document therefore wholly fails to comply with WEPA.

The conditions of approval are unlikely to meaningfully curtail the adverse impacts that are likely to occur, or which DNR has ignored. The restriction to 72.5 mgy is only an initial restriction, which may be increased without any public notice or further environmental scrutiny. DNR’s lack of scrutiny to date does not instill confidence that an application to increase the pumping rate will receive serious review. Finally, the requirement to install one piezometer-monitoring well nest at some undefined location down-gradient of the wells also is unlikely to provide the breadth of information necessary to verify SSPA’s modeling.

## Conclusion

DNR has done a grossly inadequate job of performing its obligations under WEPA. It plainly has failed to conduct the breadth and depth of investigation and disclosure of environmental impacts. While it has acknowledged significant potential cumulative impacts, it has failed to investigate, evaluate or disclose those impacts. Moreover, DNR’s lack of scrutiny potentially sets a disturbing precedent for future well applications for the Central Sands and elsewhere, creating self-imposed blinders to ignore the ever-increasing and significant adverse impacts from groundwater withdrawals to the State’s precious surface waters.

For all of these reasons, the Supplemental EA is inadequate and flawed, and does not provide enough information for meaningful public comment. We therefore strongly urge you to prepare a complete and legally sufficient EA, and reissue the same for public comment.

Thank you for your consideration of these comments.

Sincerely,

PLEASANT LAKE MANAGEMENT DISTRICT



Jean MacCubbin, President  
[directors@mypleasantlake.org](mailto:directors@mypleasantlake.org)

cc: Prof. Frances Rowe  
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*M. Frances Rowe  
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January 7, 2013

Ms. Rachel Greve, DG/5  
Wisconsin Department of Natural Resources  
101 S. Webster St.  
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Madison, WI 53707-7921

Dear Ms. Greve,

The comments below speak to the Supplemental Environmental Assessment prepared by the Wisconsin Department of Natural Resources in response to Judge John Markson's July 20, 2012 order to review the pumping impact of the proposed Richfield Dairy's high capacity wells. First, I have read and support the comments submitted by the Pleasant Lake Management District. I urge you to address the concerns they have raised. In addition, I would like to bring to your attention three points that relate to the proposed conditions noted in the Supplemental Environmental Assessment. In my opinion the conditions proposed in the Supplemental Environmental Assessment are insufficient and inadequate to manage the problems resulting from the permitting of the proposed Richfield high capacity wells.

1. Pumping Limit of 72.5 million gallons.

Page 6 of the Supplemental Environmental Assessment (SuppEA) notes that **"The addition of the Richfield Dairy wells, or any additional water withdrawal in the area, will increase existing stresses on the availability of groundwater to supply surface water bodies."** Yet the tone of the SuppEA leads me to conclude that the Department intends to approve the request for two new wells in the region. The first condition noted in the SuppEA limits the pumping from these two wells to 72.5 million gallons per year.

The question at hand is, how much water can be removed permanently from Pleasant Lake, the Little Roche-A-Cri, Tagatz Creek, and Chaffee Creek before an adverse environmental impact results? I claim we are already there; too much groundwater is already being removed. These water resources are already stressed from current high capacity well pumping in the region (based on Waushara County data, Pleasant Lake has lost over 5 feet of water to date), to add two additional high capacity wells to an already over taxed aquifer is unreasonable, no matter the capacity cap. Data that support this point of view are voluminous. See, Kraft & Mechenich, 2010; Barlow and Leake, 2012, USGS Circular 1376; Kraft, et al, 2012a; Kraft, Mechenich, & Haucke, 2012b.



Hydrologic modeling completed to date not only tells us what we can expect, but observations on the ground have already demonstrated and confirmed the predictions made years ago. This area of the state cannot support any more high capacity wells. Furthermore, although this first condition caps the pumping volume at 72.5 mgy, it is clear that there is an expectation that an increase in this number is to be expected (see number 3). Once a cattle herd is in place, who will have the authority or the backbone to deny watering the cattle? The solution is to deny the permit initially as the natural resources of the region will not support large scale dairying in this region of the Wisconsin without causing significant damage to the state's surface water resources and groundwater aquifer.

## 2. Monitoring wells.

Condition two of the SuppEA provides for the inclusion of groundwater monitoring via a piezometer as part of the Richfield Dairy's amended high capacity well approval. What is to be done with these data? Will lakes, rivers, wetlands, and streams be monitored as well? How will you separate the effects of these two wells with the impacts of hundreds of other wells and natural variability? Monitoring wells are useful if, and only if, an action predicated on monitoring outcomes has been established prior to monitoring. Twenty years of data already exist to support the modeling that has been completed, collection of new data will only add to that assemblage.

If the data collected are to be used to assess damage and "turn off" the wells when surface water levels drop, it does not say so in the SuppEA. What is to be accomplished with this monitoring? Are these data to be used to revoke the well permits if and when harm to surface resources has been established? If and when surface water levels are observed to drop in the region, which all agree they will, the high capacity well permit should be limited or revoked. And, that possibility should be made clear to the applicant at the onset. It should be clearly stated in the permit that if Pleasant Lake, wetlands, or streams in the region drop following the installation of the Richfield wells that the permit will be revoked. That way no claim can be made at a later date that such a condition was unknown.

This is a circular argument. It is well known that the surface waters will drop as the result of additional pumping in the region; all models completed to date demonstrate this. Why issue a permit at all? To issue a high capacity well permit, monitor for damage, and then revoke the permit appears to me to be wrong. It is unfair to the applicant, will result in unnecessary damage to lakes, wetlands, and streams, and will be expensive to all concerned. Therefore, given this situation no permit should be issued in the first place.

## 3. New pumping volume requests.

The third condition imposed on the applicant is that any increase in groundwater withdrawal will require a new high capacity well approval. I welcome this as a first step in assuring the aquifer will be protected, but what is missing here is specific criteria for how harm to the local surface waters will be established, which should be a prerequisite to any additional pumping being considered. No mention is made as to how the new review will be conducted or what criteria for resource health would be employed.

Moreover, there is no requirement for notification to neighboring lake districts, villages, townships, counties, private and municipal well owners, or environmental groups regarding such a request. Please add language that will require notification of any new pumping requests to stakeholders within a 5 mile radius.

## **Conclusion**

Although well intentioned, I believe the conditions placed on this permit will not protect the surface water resources or the aquifer of the region. Any pumping is too much pumping for this area of this aquifer, no mention is made as to how the monitoring data are to be used, and the assumption that the pumping volume can and will be increased is problematic.

The Central Sands aquifer is in trouble. This conclusion is clear from modeling, existing data, and simple observation. One does not have to be a hydrologist or a biologist to identify a dry lake or stream or to observe that what once was a shallow water habitat is now dry land. The conditions placed on this permit are not sufficient or adequate to protect the aquifer or the region's rivers, streams, wetlands, and lakes. If issued, this high capacity well permit needs to include specific language that will identify criteria to assess harm to surface water bodies, it must require that pumping volume be reduced or suspended when harm has been identified to surface waters or the aquifer, and these wells must be capped at the original volume request - no additional pumping to be allowed.

Thank you for your time and your consideration of my points of view.

Sincerely,

Francie Rowe

## **References**

- Barlow, P.M., and Leake, S.A. 2012, *Streamflow depletion by wells – Understanding and managing the effects of groundwater pumping on streamflow*: USGS Circular 1376.
- Kraft, G. J., & Mechenich, D. J. 2010. *Groundwater pumping effects on groundwater levels, lake levels, and streamflows in the Wisconsin central sands*. Center for Watershed Science and Education, Wisconsin.
- Kraft, G. J., Clancy, K., Mechenich, D. J. and Haucke, J. 2012a, Irrigation Effects in the Northern Lake States: Wisconsin Central Sands Revisited. *Ground Water*, 50: 308–318. doi: 10.1111/j.1745-6584.2011.00836
- Kraft, G.J., Mechenich, D.J., & Haucke, J. 2012b. *Information Support for Groundwater Management in the Wisconsin Central Sands*, 2009-2011.



## John Muir Chapter

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January 7, 2013

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[Rachel.Greve@wisconsin.gov](mailto:Rachel.Greve@wisconsin.gov)

Re: Comments on the revised Environmental Assessment for Richfield Dairy's proposed high capacity wells

Dear Ms. Greve:

Thank you for providing us with this opportunity to comment on the revised Environmental Assessment (EA) for Richfield Dairy's permit application to install two high capacity wells associated with their proposed Confined Animal Feeding Operation (CAFO) in Adams County. The Sierra Club – John Muir Chapter is concerned that the DNR's decision to approve the revised EA with conditions isn't adequate to protect water quantity over the long term in the Central Sands Region, a water-limited area of Wisconsin that is already facing significant drawdowns related to crop irrigation and other activities.

The Sierra Club helped pass Act 310, Wisconsin's current groundwater law, an important step for conserving groundwater and highlighting its connection to surface waters. We also supported implementing follow-up recommendations of the Groundwater Advisory Committee that would have allowed the DNR to practice adaptive management, enhance protection for small springs, and develop a means of designating new Groundwater Management Areas. The Central Sands Region would be a prime candidate for GMA designation, as irrigation pumping has reduced streamflow by 25-30% in this area, and severe water drawdowns have already occurred on the Little Plover River and Bloody Run Creek a Class 1 trout stream (<http://www.lakebeulah.org/pdf/hicaplaw.pdf>). Similarly, the proposed Richfield CAFO could impact Class 1 trout streams including Fordham Creek, Little Roche-a-Cri Creek, Chaffee Creek, and Tagatz Creek in future years.

Members of Sierra Club's Water Sentinels visited Lake Pleasant and other nearby areas in 2012 that would potentially be impacted by the proposed Richfield CAFO. At the time, the area had been experiencing prolonged, severe drought conditions evident through impacts on nearby farm fields, some of which no longer had access to water needed for crop irrigation. We also spoke with local residents and saw evidence that Pleasant Lake was experiencing permanent drawdowns – such as the historical location of swimming piers and docks that were now many feet away from the water's edge – that were likely result of many years of intense water use in the nearby area. Finally, we observed alarming drawdowns at Patrick's Lake, which was in close proximity to the existing New Chester Dairy, which has proposed doubling in size (with corresponding increases in water use) in the next few years.

DNR's modeling suggests that Richfield's high capacity wells will result in  $1.6 \pm 0.26$  inches of additional drawdowns of Lake Pleasant. However, more frequent climate change-related droughts and elevated temperatures in Wisconsin could impact the model, both in terms of increasing actual lake drawdowns and by increasing the water use of the applicant and the other existing and future high capacity wells in the area. It is our understanding that during droughts, the DNR routinely allows high capacity well users to increase capacity in order to prevent losses to crops or livestock, and this could result water drawdowns that exceed predicted levels. Modeling water impacts for this and other high capacity wells should therefore account for the potential impacts of climate change in order to maximize predictive accuracy.

One of the Sierra Club's biggest concerns with the proposed high capacity wells associated with the proposed Richfield CAFO are their cumulative impacts relative to existing and future water withdrawals in the water-limited Central Sands region. The DNR touches on cumulative impacts on pages 6-7 in the revised EA. This section mentions that there are 90 existing high capacity wells with a capacity of over 70 gpm within 4 miles. In addition, the DNR has permitted 51 high capacity wells in Waushara County and 35 in Adams County in the past 10 months alone. Dr. Kraft and DNR predict cumulative water table drawdown impacts of 1.5 - 0.7 feet at Pleasant Lake, as well as flow reductions of 1.5 - 15% or 3 - 6% in nearby trout streams respectively, depending on which model is used. The EA then goes on to state that DNR is limited to considering whether the proposed wells on the high capacity property may cause significant adverse environmental impacts. However, the 2011 Lake Beulah Supreme Court decision suggests that the DNR may be able to go further in limiting the permitting of additional high capacity wells in areas where negative impacts on surface areas are observed (<http://www.jsonline.com/news/wisconsin/125193059.html>). The Sierra Club urges the DNR to exercise their full authority to protect groundwater and surface water from excessive withdrawals based on this decision. Exercising this authority will benefit residential, commercial and recreational water users in the area in coming years.

In Wisconsin we are blessed with plentiful groundwater almost everywhere, but we've learned that we cannot take it for granted. We are all dependent on groundwater in a myriad of ways for supporting business, agriculture, fisheries, wildlife, recreation and tourism. However it is more than that -- it is one of our crown jewels as a society because drinking water is so critical to sustaining life.

Thank you for considering our comments on this matter. We hope that they will move us toward our shared goals of having both a healthy environment and long term economic prosperity. Please contact us any time with questions or concerns regarding this issue.

Sincerely,

A handwritten signature in dark ink, reading "Shahla M. Werner". The signature is fluid and cursive, with the first name being the most prominent.

Shahla M. Werner, Director, Sierra Club - John Muir Chapter

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January 7, 2013

Via email and U.S. Mail

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RE: Proposed Richfield Dairy, Tn. of Richfield, Adams Co., WI – Comments Regarding Supplemental Environmental Assessment for High Capacity Wells

Dear Ms. Greve:

I previously provided comments to you on behalf of the Friends of the Central Sands and Bob Clarke regarding hydrologic impacts associated with the proposed Richfield Dairy (RD) Site on July 25, 2011 and September 22, 2011. I have reviewed information related to the November 28, 2012 Supplemental Environmental Assessment for the high capacity wells associated with the proposed Richfield Dairy.

Respectfully, my review concludes that the WDNR environmental analysis does not sufficiently describe nor adequately evaluate the significance of the impacts posed by the proposed wells to the water resources of the State. In particular the supplemental EA did not evaluate impacts at the nearby sensitive stream headwaters and did not evaluate the significance of the direct impact of the proposed wells as part of the cumulative impacts caused by the pumping associated with the irrigation wells previously approved by the Department in the vicinity. My specific comments follow.

- 1) The supplemental EA did not evaluate impacts at the upper stream headwaters in the RD vicinity where the effects of both the existing irrigation pumping and the proposed wells will be most pronounced. The October 7, 2011 letter report from George Kraft, UW-Stevens Point to Eric Ebersberger included groundwater modeling of the upper 1.7 miles of the tributary of Little Roche-



A-Cri Creek closest to the proposed wells. The results showed the existing irrigation pumping during average climatic conditions has resulted in the reduction of groundwater discharge at the upper 400 meters of the stream to the point the stream dries up. The upper 1600 meters (one mile) shows a 31% stream flow reduction and the flow reduction is 22% at 2800 meters (1.7 miles) downstream. Kraft then simulates the proposed RD wells pumping at 52.5 million gallons per year (100 gpm) less the impacts of the current RD site irrigation well #146 (1.9" recharge reduction over 240 acres = 24 gpm) for a total direct impact of 76 gpm. This analysis showed additional reductions in stream flow of greater than 5% within the upper mile of the stream. Since the proposed pumping rate for the RD wells has since been increased to 138 gpm (72.5 million gallons/year) the impact would be 138 gpm less 24 gpm for a total of 114 gpm. Since 114 gpm is 1.5 times larger than 76 gpm the additional direct impact of the RD wells can be correspondingly extrapolated from greater than a 5% to greater than a 7.5% reduction in flow in the upper mile of the Little Roche-A-Cri tributary.

The supplemental EA utilized model results from S.S. Papadopoulos & Associates (SSPA) to evaluate impacts at the Little Roche -A- Cri headwaters. The SSPA analysis of existing irrigation pumping impacts has a large degree of uncertainty due to dependence on historical pumping records known to be incomplete and inaccurate, along with unjustified reliance on a value of 20% for irrigation consumptive use. The SSPA prediction of irrigated pumping impacts at Pleasant Lake was significantly less than that demonstrated through the historical water level regression analysis reported in Kraft & Mechenich (2010) and Kraft et.al. (2012), indicating a lack of model reliability. SSPA reported existing irrigated impacts on Little Roche- A- Cri at 10<sup>th</sup> Ave. caused a 5.1% reduction in average flow while Kraft & Mechenich reported a 5.3% reduction. SSPA used a transient model simulation of proposed RD well pumping and predicted direct impacts to Little Roche- A- Cri at Cypress Ave., approximately four miles below the headwaters, to be insignificant, with less than a one percent flow reduction. The SSPA analysis failed to evaluate the significant direct impacts of the proposed RD wells at the sensitive stream headwaters within the first mile of stream flow and the cumulative impacts of the existing irrigation pumping impacts in the same location. In addition, the SSPA transient RD well analysis is likely to significantly under predict long term pumping impacts by truncating their model simulation at 25 years. The relatively long distance from the headwaters to the proposed RD wells along with the large storage values for the aquifer materials require that a steady state simulation be used to evaluate the RD well impacts.

The October 7, 2011 letter report from George Kraft, UW-Stevens Point to Eric Ebersberger also included groundwater modeling results for the upper reach of Fordham Cr., a Class 1 trout stream. Existing irrigation pumping has resulted in a 5 to 10% reduction inflow along the upper 1400 meters of the stream. Extrapolating to the new 138 gpm proposed RD well pumping rate indicates a direct impact of up to a 0.75% additional decrease in flow within the upper 1400 meters of Fordham Cr. SSPA, using a transient 25 year simulation, reported an insignificant reduction in flow on Fordham Cr. at 8<sup>th</sup> Ave, approximately three miles below the headwaters. As with Little Roche -A- Cri Cr., SSPA analysis failed to consider the significant impacts of the direct impacts of the proposed RD wells and the cumulative impacts from the existing irrigation pumping at the sensitive stream

headwaters within the first mile of stream flow. As before, the 25-year SSPA transient analysis is likely to significantly under predict long term pumping impacts.

White et al, 1976, indicated reduction in trout biomass is correlated with reduced stream base flows. Specific factors for this reduction include increased summer water temperatures, decreased winter water temperatures, decreased living space, decreased stream edge and in-stream hiding cover. The existing irrigated pumping impacts must be evaluated with the cumulative impacts of the proposed RD wells to determine the significance of the reduced base flows on trout habitat.

- 2) The supplemental EA failed to evaluate the significance of seasonal and climatic fluctuations in relation to the direct impacts of the proposed RD wells and the existing irrigation groundwater pumping impacts.
  - a) The SSPA, 2012 and Kraft, 2010 groundwater models used to evaluate well pumping impacts assumed a constant average recharge to the groundwater. Kraft, 2010, indicated seasonal and climatic fluctuations could result in significant variation in water levels and stream flows from those of the steady state model simulations using average conditions. This is expressed most dramatically in stream headwaters adjacent to high concentrations of irrigation wells. Carter Cr. stream flow at CTH "G" was modeled by SSPA with average steady state conditions with irrigation pumping to be 2.3 cfs compared to 3.3 cfs assuming no irrigation. However droughty conditions this summer resulted in flows decreasing from 4.6 cfs (5/24/12), 2.2 cfs (6/26/12), 0.315 cfs (7/23/12) and droughty conditions produced a low flow of 0.154 cfs on 8/9/07. SSPA, 2012a, as part of their transient groundwater modeling for the proposed Golden Sands Dairy, varied average groundwater recharge monthly, with most recharge added in spring, resulting in a modeled discharge of Ten Mile Cr. that varied from an average spring maximum of 90 cfs to a late fall and winter minimum of 30 cfs. This type of model simulation conformed well to the average measured monthly Ten Mile Cr. stream flow data. SSPA also varied the proposed irrigation pumping rate monthly to withdraw all of the irrigation water during the summer growing season. The SSPA model predicted stream impacts that varied monthly with the magnitude of the stream flow impacts increasing approximately ten fold from May/June to September.

The direct impacts associated with the proposed RD pumping and the cumulative impacts associated with the irrigated pumping in the vicinity of the proposed RD wells can only be reasonably evaluated using transient groundwater modeling in a manner similar to the SSPA Golden Sands simulation discussed, where the groundwater recharge occurs primarily in spring and the irrigated pumping occurs in summer. In addition, the EA needs to evaluate water level and stream flow impacts during times of drought when base flow reductions produce the most significant impacts on the water resources. The pumping records for the high capacity irrigation well #146 at the RD site show that though the average pumping rate from 2007 through 2011 was 47 million gallons per year, during the time of drought in 1988 over 99 million gallons was pumped. High capacity well #4 average flow (2008, 2010, and 2011) was noted to be 22 million

gallons per year, but pumping in 1988 was 59 million gallons. The impact of irrigation pumping during a drought time is further increased due to the higher evapotranspiration rates present which prevents as much applied irrigation water to be recharged to the water table resulting in higher relative consumptive losses. In addition, during drought times the groundwater recharge rate in non-irrigated areas in the area would be significantly lower. The result is severe impacts in the headwater stream areas or lakes nearest the areas of irrigated agriculture and is evidenced by marked decrease or total elimination of headwater stream flow or lakes in these areas during drought times. The Wisconsin Central Sands has experienced approximately 20 moderate to extreme drought events since 1890.

- b) The evaluation of the direct impacts associated with the proposed RD pumping and the cumulative impacts associated with the proposed RD wells or any other wells proposed in the Central Sands will require application of a transient regional groundwater model of the entire Central Sands region. This will allow input of recharge and irrigation pumping monthly using various estimates of pumping and recharge expected during both average and drought conditions. Model predicted water levels and flow can then be compared to measured water levels and stream flows at locations of known impact such as the Little Plover River or Carter Creek and water levels including Long Lake and Pleasant Lake during both average and drought conditions to help validate the model. Due to the relative uniformity of the Central Sands regional model hydrogeology, predictions of transient impacts will then be able to be used with some degree of confidence for evaluating transient impacts throughout the model area during both average and drought conditions.
- 3) The supplemental EA indicates the stream flow reductions associated with the proposed wells are unlikely to be significant because, according to Hamilton and Seelbach, 2011, at flow reductions less than 4% even sensitive stream types do not typically experience observable changes in fish populations. This conclusion is in error due to the EA's failure to evaluate trout habitat impacts in the upper headwaters of streams within the first mile of stream flow, the failure to evaluate the significance of the direct impacts in consideration of existing cumulative irrigation impacts, and failure to evaluate the direct and cumulative habitat impacts during seasonal and drought periods. Pumping impacts with stream flow headwater reductions of much greater than 4% are in evidence in the vicinity of the proposed RD.
- a) This issue was discussed previously in point 1 above for Little Roche- A- Cri and Fordham Creeks with existing flow reduction due to irrigation causing impacts up to 31%.
  - b) Kraft, 2010, indicated existing irrigation pumping has reduced flow in the first mile of Tagatz Cr. by 5 to 10% during average steady state conditions. SSPA, 2012, modeling of Tagatz Cr. flow near Westfield under average steady state conditions decreased 6.7% due to irrigation impacts. SSPA reports a reduction of 27 gpm at this location due to the direct impact of the proposed RD wells. The Kraft October 7, 2011 letter showed proposed RD pumping would reduce flow within the upper 1.5 miles of Tagatz Cr. up to an additional 7.5 % when the increased withdrawal rate

of 138 gpm is considered assuming an extrapolated impact of 1.5 times that of 100 gpm. The EA needs to evaluate the direct and cumulative impacts of irrigation and proposed RD pumping in the Tagatz Cr. headwater area, including during drought conditions.

- c) Kraft, 2010 indicated existing irrigation pumping has reduced flow in the first mile of Chafee Cr. by 2% to greater than 10% during average steady state conditions. SSPA, 2012, modeling of Chafee Cr. flow at CTH "CH" under average steady state conditions resulted in a decreased flow of 17.6% due to irrigation impacts. SSPA reports a reduction of 22 gpm (0.05 cfs) at this location due to the direct impact of the proposed RD wells. The Kraft October 7, 2011 letter showed the direct impacts of the proposed RD pumping would reduce flow at the Chafee Cr. headwaters up to an additional 7.5 % when the increased withdrawal rate of 138 gpm is considered assuming an extrapolated impact of 1.5 times that of 100 gpm. The Chafee Cr. stream data from 2007 at CTH "CH" also indicates existing irrigation pumping may be having a significant impact with flows declining seasonally during irrigation from 1.2 cfs (6/13/07), 0.95 cfs (7/12/07), 0.47 cfs (8/9/07) to 0.28 (11/16/07). It would be expected the Chaffee spring pond, located approximately 3800 feet upstream would have been experiencing even lower or no flow conditions at this time. The supplemental EA statement indicating the Chaffee spring would not be significantly affected by the SSPA modeled direct RD well impact of 0.05 cfs does not appear justified. As indicated earlier the SSPA understates impacts because of the lack of steady state simulation and that seasonal and climatic impacts were not considered. Even a 0.05 cfs reduction compared to the 11/16/07 flow of 0.28 cfs during a moderate drought produces an 18% reduction. The supplemental EA statement that the proposed RD wells lay outside the contributing area of the Chafee Spring is incorrect. Both the Kraft and SSPA modeling demonstrates reduction of groundwater flow in the vicinity of the proposed RD wells will lead to reductions in discharge in this headwater area. The supplemental EA needs to evaluate both the direct proposed RD pumping impact and the cumulative impacts of irrigation in the Chafee Cr. headwater area including during drought conditions.
- 4) The supplemental EA states the SSPA analysis of the proposed RD wells' groundwater level impacts at the wetland area 1.5 miles northwest of the well site would be less than one inch after 25 years of pumping and therefore not result in significant impacts. Kraft & Mechenich (2010) indicate existing irrigation pumping has caused approximately 0.5 to 1.0 feet of groundwater level reduction in this area. Seasonal and drought conditions will significantly increase these impacts due to close proximity of irrigation wells. These impacts may have already caused significant impacts to wetland plant communities dependent on maintaining saturated conditions within their root zone. The cumulative impacts of the proposed RD well pumping on the wetlands in this area requires evaluation, including consideration of seasonal and drought conditions.
- 5) The regression analysis of Kraft & Mechenich (2010) showed that steady state declines of at least 1.5 feet at Pleasant Lake were attributable to the current irrigation pumping west of the lake. The report indicates that the Pleasant Lake impacts are likely to be understated by 0.4 to 0.76 feet because the regression calibration reference points assumed not to be impacted by pumping had

actually experienced lake level declines due to pumping of 0.4 to 0.76 feet. SSPA, 2012, steady state model simulation indicates the existing irrigation pumping results in a 0.7 foot decline in the Pleasant lake water elevation. The Kraft & Mechenich, 2010, regression analysis of groundwater elevations and lake stages provide convincing evidence that the SSPA modeling is under-predicting irrigation pumping impacts on Pleasant Lake. Large potential uncertainties in the SSPA model simulation include an unjustified estimate of 20% for irrigation pumping consumptive loss and incomplete and inaccurate historic irrigation pumping data. It is possible the constant head boundary along the east side of the SSPA model domain may be constraining the response of the groundwater heads in the Pleasant Lake and Chaffee and Tagatz Cr. headwater locations. The October 7, 2011 letter report from George Kraft, UW-Stevens Point to Eric Ebersberger indicates the 2007 irrigated pumping impacts resulted in a 3.3 foot drawdown at Pleasant Lake and estimated, using steady state simulation of average conditions, and an additional direct impact of 100 gpm pumping from the proposed RD wells to result in 2 inches of additional drawdown. As discussed previously the latest proposed RD pumping rate of 138 gpm would result in approximately 1.5 times the water removal from the proposed wells and a corresponding increase in direct drawdown impacts. The SSPA, 2012, transient simulation of the 138 gpm proposed RD well pumping resulted in less than 2.0 inches of lake stage decline. This analysis is flawed in that a more appropriate steady state simulation is likely to result in a significant increase in pumping impact. The SSPA prediction uncertainty analysis using a 90% confidence interval should not be given very much credence due to the lack of a steady state simulation, the lack of calibration to the lake level regression analysis of Kraft & Mechenich, 2010, the lack of evaluation in conjunction with irrigation pumping under seasonal and climatic cumulative impact conditions, and uncertainty evidenced at model flux boundaries such as at the South Branch of Wedde Cr. at CTH "JJ" where flows were estimated at 7 cfs, but model calculated flows were 2.2 cfs without irrigation impacts and 2.1 cfs with irrigation impacts.

While the Pleasant lake levels do fluctuate due to natural seasonal impacts related to variations in precipitation, evapotranspiration, and seepage to groundwater, the cumulative impacts of existing irrigation plus the direct impact of the proposed RD wells resulting in a 2.0 foot lake level decline during average steady state conditions represent significant adverse impacts to Pleasant Lake's water resource values, being expressed by shore line recession, access problems with docks, and fish habitat impacts related to a decreased water depth and volume, increased water temperature fluctuations, and loss of lake bed structure. With reduced recharge and increased irrigation pumping and consumptive losses during expected drought episodes the magnitude of the impacts would increase significantly as indicated by the estimated 3.3 foot water level decline of Pleasant Lake during the moderate drought period of 2006/2007. The supplemental EA assertion that pumping impacts are acceptable because they are within the range of natural Pleasant Lake level fluctuation is not reasonable or logical since the pumping impacts must be evaluated in an additive fashion to the natural lake fluctuation and a determination of significance presented. It must be recognized that the pumping of the proposed RD wells will result in a relatively steady permanent direct impact at the stream headwaters and lakes closest to RD in addition to the significant

fluctuation of irrigation pumping and natural recharge rates due to climatic variations. A public interest lake stage should be established to which the direct and cumulative impacts can be compared and the significance of the impact determined.

### **Conclusion**

The supplemental EA does not sufficiently describe nor adequately evaluate the significance of the impacts posed by the proposed RD wells to the water resources of the State. In particular, the supplemental EA did not evaluate impacts at the nearby sensitive stream headwaters within the first mile of stream flow and did not evaluate the significance of the stream and lake impacts of the proposed wells as part of the cumulative impacts caused by the pumping associated with the irrigation wells previously approved by the Department in the vicinity. In addition, the supplemental EA neglected to evaluate the direct and cumulative impacts during seasonal and drought conditions when stressed resources are most susceptible to pumping effects most likely to result in significant adverse impacts to the State's waters. The specific evaluation of the significance of these direct and cumulative impacts in relation to trout habitat, minimum public interest stream flow, lake stage requirements, and wetland hydrological requirements is needed.

The evaluations required can be made by extending the existing groundwater modeling work already established utilizing a regional Central Sands model domain. Monthly recharge estimates could be used to establish initial calibration and estimates of average summer monthly irrigation pumping losses could be distributed at irrigated model cells to provide a base model simulation of irrigation pumping impacts with calibration to measured seasonal head and stream flow fluctuations. The simulation period should be sufficiently long to approach steady state conditions in model domain locations distant from the concentrations of irrigation wells. The model could then be further validated through transient simulations of various estimated periods of drought scenarios through reductions in recharge and increases in irrigation pumping. These simulations could be calibrated to historic stream flows, groundwater elevations, and lake stages. The relative simplicity of the Central sands hydrogeological system would then allow the model to evaluate proposed pumping impacts or management alternatives with some degree of confidence throughout the model domain. The establishment of a more comprehensive Central Sand headwater stream flow, lake level, and groundwater level monitoring program would aid in model validation.

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### **Experience**

2011 to present – Hydrogeological and environmental engineering consulting in areas of waste land spreading, high capacity wells, chlorinated solvent spills, and wetland hydrology.

1993 to 2011 – manage the hazardous materials program for Wisconsin Department of Transportation, Southeast Region. Major projects include Miller Park Baseball Stadium, Lake Arterial Parkway, Park East, and Marquette Interchange. Manage hydrologic assessment of WisDOT wetland program issues.

1987 to 1993 – Wisconsin Department of Natural Resources, Bureau of Solid Waste Management, made feasibility determinations for solid waste facilities, coordinated hydrologic assessments of Crandon Mine Environmental Impact Statement.

1986 to 1987 – Idaho National Engineering Laboratory, Department of Energy (EG&G), hazardous and radioactive waste assessments for soil and groundwater, dioxin soil testing at Agent Orange storage sites (U.S. Department of Defense), with Level 1 security clearance.

1980 to 1985 – Wisconsin DNR, Bureau of Solid and Hazardous Waste Management with duties similar to DNR above.

1978 to 1980 – Colorado State University, graduate research, uranium solution mining impacts, reported to Colorado Dept. of Health.

1976 to 1977 – Brodhead High School, taught chemistry, advanced chemistry, and physics

1975 to 1976 – Solar Specialists, Inc., solar space heating and hot water installation

### **Education**

1981 – 1985, U. of Wisconsin-Madison, graduate study in numerical groundwater flow and contaminant transport modeling; USGS Training Center, groundwater modeling

1978 – 1980, Colorado State University, Master of Geology

1970 – 1974, U. of Wisconsin-Madison, BS in secondary education



**Other Experience**

Town Board Chair – Town of Middleton, Dane County Wisconsin, 1989-1990

Restoration Ecology – Ongoing prairie, oak-savanna, wetland restoration in conjunction with “The Prairie Enthusiasts” on 226 acres of land in western Dane County.

Extensive outdoor experience including: mountaineering and rock climbing, winter camping, bicycling, and kayaking

**Registration**

Wisconsin Professional Engineer, # 30156

Wisconsin Professional Geologist, # 556

Hazardous Waste Operations and Emergency Response Certified (29 CFR1910.120)

January 7, 2013

MEMO

To: Christa Westerberg, Atty.  
McGillivray Westerberg & Bender, LLC

From: Ray J. White, Ph.D.



Re: Comments on Wisconsin DNR's Richfield Dairy High Capacity Well Supplemental Environmental Assessment – 72.5 MGY

1. The EA cannot rightfully claim no significant impact on streams, if it ignores the organisms and the physical and ecological processes that depend on groundwater inflow, e.g., involvements of brook, brown and rainbow trout, of smaller creatures that are their food, of associated wildlife, and of the riparian vegetation that helps shape habitat for all those forms of life. The EA considers hydrology almost exclusively, whereas impacts of decreased groundwater-fed flow are geomorphic and ultimately biological. Besides water, a stream consists of the physical conformations, soils, vegetation, and animals of the channel and of the interacting riparian areas and wetlands. The EA fails to relate hydrology to the ways that the area's streams work physically and biologically—how the physical and biological processes are affected by the existing pumping-caused groundwater diminution and would be affected by cumulative impacts that include the proposed pumping. The EA superficially acknowledges trout; it fails even to mention a single fluvial geomorphic habitat ramification or a single species of plant or animal that exists in the affected streams or riparian areas. The EA doesn't bring to bear information from DNR files on fish, wildlife, and habitat in the impacted streams, riparian areas, and associated wetlands. There is no indication of EA input about streams by geomorphologists, ecologists, or fishery biologists. If the EA does not deal thoroughly with the ecologies of riparian vegetation, of stream fishes, and of associated wildlife and human uses of the fish and wildlife resources, no valid conclusion can be made about environmental impacts.
2. The EA is based on average flows, but organisms are restricted by minimum flows and associated severe conditions. Low baseflows and concomitant warm or cold extremes often cause the most harm for trout and the stream-and-riparian ecosystems. This omission is notable because Central Wisconsin has frequent droughts (Kraft et al. 2010, Fig. II-3). Baseflow reduction in headwater streams (1 mile below stream source) is 5% to 44% under present pumping, and these declines would be larger during seasonal dries and prolonged droughts (Kraft 2010, Fig. VII-4).
3. Stream-dwelling trout need all the baseflow they can get, except in streams that are excessively cold in summer. If a trout population is at carrying capacity (maximum number or biomass that the habitat can support indefinitely), then reducing baseflow by any amount is likely to decrease the population via decreased reproduction and/or decreased survival and/or decreased body growth. If the population is at lower than carrying capacity before baseflow reduction, it will be tending toward carrying capacity, and reducing the base flow will diminish the stream capacity toward which the trout population can expand. If baseflow reduction is slight and of short duration, then a trout

population at carrying-capacity will start to decrease but cease to do so when flow increases. If, within a given area along the course of a stream's trout zone, baseflow decrease is major and/or of long enough duration, then trout population decreases more or less proportionally in the long term to the proportion of baseflow decrease, but due to decreased thermal suitability of the water, the trout population may decrease more than would correspond to the proportion of baseflow reduction. Under reduced baseflow in a given stream area, the trout population will diminish progressively until some threshold of intolerability is reached (in terms of water temperature, living space, or availability of other habitat features or food), at which point the population will cease to exist, even before flow becomes zero.

4. In all or most of the kinds of trout streams that the proposed pumping will impact, any reduction in baseflow stands to reduce the trout zone's length—the length of course that has sufficient flow, temperature, and other habitat features for sustaining a naturally reproducing trout population. This shortening can happen by elimination of sufficient flow in small headwaters and by shrinking at either end of the trout zone the extent of thermally suitable water, i.e., water cool enough for trout during the hot season and warm enough for trout during winter.
5. Pumping impacts on headwaters are of concern in all the streams at issue. The EA deals inadequately with importance of headwaters to trout populations. In headwaters unaffected by water withdrawal or other human-generated damage, channels tend to be relatively narrow, fitted to small baseflow, and have interacting geomorphic and bank-vegetational features (course curvature, width constriction, bank undercutting, etc.) that form trout habitat. When pumping reduces baseflow, the water volume and flow patterns become underfitted to the channel. Shallowed water offers less protection from predators and shrinks living space. As wetted width decreases, trout find less hiding cover under banks and bank vegetation. Even extremely small amounts of water in headwater streams, i.e. one cubic foot per second or less, can support trout spawning and juvenile rearing, particularly for brook trout. Reduction in base flow can eliminate these areas. Brook trout eggs and sac fry develop during winter in streambed gravel or coarse sand, and depend on upwelling flow of groundwater for oxygen and suitable temperature. Pumping-induced reduction of groundwater inflow can prevent entry of adult brook trout into some headwater areas, or where they still can spawn, will then decrease oxygen supply and thermal suitability, resulting in slower development and higher mortality of eggs and sac fry. Fry that do emerge will find less habitat and less food. Those are among the impacts of low winter groundwater input and baseflow.
6. EA page 4, paragraph 2: "The maximum modeled flow reduction was 0.10 cfs . . . in Little Roche a Cri Creek at 10<sup>th</sup> Ave. This flow reduction constitutes about 0.3% of the measured baseflow (34 cfs) at this location." This is at the downstream limit of designated trout water, so consideration at this point has little meaning for the trout resource. In the SSPA report, Table 1: The sites Little Roche-a-Cri (10<sup>th</sup> Ave), Tagatz (near Westfield), and So. Br. Wedde (at JJ) are not headwaters; therefore, judging effects of flow reductions at these points is not crucial in assessing impact on trout.
7. The EA's conclusions on stream impacts rely on the Michigan Water Withdrawal Assessment Process (Hamilton & Seelbach 2011)—hereafter "Michigan WWAP"—but do not relate it to the hydro-geomorphic and biological characteristics and ecologies of the streams at issue. The EA states at p 4, ¶ 2: "At flow reductions of less than 4%, even sensitive stream types do not typically experience observable changes in fish populations (Hamilton and Seelbach, 2011). The expected flow reductions due to the proposed Dairy wells are unlikely to cause a significant environmental impact to the streams." The conclusion is not based on any discussion of relationships between flow and the habitat requirements and life histories of pertinent organisms. It doesn't properly consider annual low flow and drought conditions or cumulative biological impacts. And the Michigan WWAP is inappropriate for EA use because: (a) Under the WWAP, when a well is permitted, the amount pumped decreases the amount that can be pumped at future proposed well sites in the same water

management area (WMA) of Michigan's 5,400 WMAs, so the WWAP considers cumulative effects in a way for which Wisconsin DNR has not set up a procedure. (b) The WWAP is severely flawed, in that, although based on certain relationships between baseflow, fish habitat, and fish presence at 1700 stream sites, it is not based on evidence from measurements of conditions on any stream before and after a flow reduction, it does not treat headwaters in a way that is appropriate to this case, it does not consider the trout resource in terms of the sizes of fish that anglers desire, and it fails to take drought and seasonal lows of baseflow into account (its "Index Flows" being *median* flows for August, not low baseflows). (c) The WWAP is preliminary (Hamilton & Seelbach 2011, p 34).

8. The EA deals inadequately with thermal impacts. "Habitat conditions during summer base flows limit fish distributions as water temperatures peak during this time period and have a dominant effect on fish physiology, growth, and survival . . . Reductions in base flow may also significantly alter other habitat variables (e.g., dissolved oxygen or flow velocity) and critical ecosystem functions (e.g., sediment transport or channel maintenance)" (Zorn et al. 2008, p 3). Critical baseflows may also occur in winter (White et al. 1976) and thus lead to unsuitably cold water.
9. Parts of Fordham and Little Roche-a-Cri Creeks are the cold-transitional type, described in Hamilton & Seelbach (2011), therefore especially vulnerable to trout population damage from relatively small reductions in baseflow. Indeed, all the trout streams under consideration have a core trout zone for part of their length but then become cold-transitional in downstream reaches.
10. For all the streams at issue, baseflow reduction indices (BRI) for existing pumping in the vicinity of the proposed Richfield wells are greater than 5% and in some parts greater than 10% for the average condition and not what would be produced during dry seasons and dry years (Kraft 2011, Fig. 2). Therefore, headwaters baseflow is already severely impacted, especially during dry periods. Adding an increase in BRI due to proposed Richfield wells (modeled for a pumping rate of 52.5 mgd, far less than 72.5 mgd; Kraft 2011, Fig. 4) makes the cumulative impact on trout truly immense. Present irrigation baseflow reductions of 22% to 100% occur in the upper 1.74 miles of a Little Roche-a-Cri Creek headwater in one modeled example, based on average conditions, not seasonal dry periods and prolonged droughts, when percent reduction would be greater (Kraft 2011, Table 2). It can be concluded that conditions in headwaters of this stream are already disastrous, and added pumping would extend those conditions further downstream.

## References

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McGILLIVRAY  
WESTERBERG  
& BENDER LLC  
ATTORNEYS

January 7, 2013

*Via Email & Hand-Delivery*

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*Re: Richfield Dairy, Comments on Draft Supplemental EA*

Dear Ms. Greve:

This letter is submitted on behalf of Friends of the Central Sands ("FOCS"), a group of citizens concerned about water quality and quantity issues in the Central Sands region of Wisconsin. FOCS is particularly concerned about the proposed Richfield Dairy in Adams County, Wisconsin, a large-scale concentrated animal feeding operation which seeks to install two high-capacity wells in an area that is already experiencing acute environmental effects from high-capacity well pumping.

This letter and the attached comments from Mr. Kenneth Wade, P.E., P.G. (**Attachment A**), and Ray White, Ph.D. (**Attachment B**), are in response to the draft supplemental environmental assessment ("Supplemental EA") issued by the DNR in relation to the proposed high-capacity well permit sought by the dairy, with an annual pumping limit of 72.5 million gallons per year ("MGPY"). For the following reasons, the Supplemental EA is not supported by adequate analysis and fails to meet the requirements of the Wisconsin Environmental Policy Act, Wis. Stat. § 1.11 ("WEPA"). Additionally, FOCS has submitted sufficient evidence to trigger additional environmental review or permit denial under *Lake Beulah Management District v. DNR*, 2011 WI 54. The Supplemental EA should not be certified and the high-capacity well permit should not be issued.

*A. The Supplemental EA Does Not Satisfy WEPA.*

1. Required Contents of an Environmental Assessment.

As you know, "[t]he purpose of WEPA is to insure that agencies consider environmental impacts during decision making." *State ex rel. Boehm v. DNR*, 174 Wis. 2d 657, 665, 497 N.W.2d 445 (1993). In addition to informing the decisionmakers about a project's environmental impact, WEPA procedures are also intended to inform the public about a proposed action. *Wisconsin's Envtl. Decade, Inc. v. DNR*, 94 Wis. 2d 263, 271, 288 N.W.2d 168 (Ct. App. 1979). Under the DNR's regulations, environmental assessments "shall be an analytical document that enables environmental and economic factors to be considered in the development of a proposed action." Wis. Admin. Code § NR 150.22(b). Further, "[t]he environmental analysis shall include information which is important to evaluating reasonably foreseeable significant adverse impacts on the human environment." *Id.* § 150.22(e).

Wisconsin's regulations implementing WEPA are specific about what environmental assessments and environmental impact statements prepared under WEPA must contain. See Wis. Admin. Code § NR 150.22. The DNR must consider a number of factors in determining whether an action is major:

1. The extent of short-term and long-term environmental effects including secondary effects; particularly to geographically scarce resources such as historic or cultural resources, scenic and recreational resources, prime farmlands, threatened or endangered species or ecologically critical areas.
2. The extent of cumulative effects of repeated actions of the same type, or related actions or other activities occurring locally that can be reasonably anticipated and that would compound impacts.
3. The degree of risk or uncertainty in predicting environmental effects or effectively controlling potential environmental impacts including those relating to public health or safety.
4. The degree in which the action may establish a precedent for future actions or foreclose future options. This includes consistency with plans or policy of local, state or federal government.
5. The degree of controversy over the effects on the quality of the human environment.

Wis. Admin. Code § NR 150.22(2)(a). An EA must also contain "[a]n evaluation of the probable environmental consequences of the proposal." *Id.* § NR 150.22(b) (emphasis added). This evaluation includes "the positive and negative effects of the proposed action as it relates to the physical, biological, and socioeconomic environment." *Id.* And further, "[t]he discussion shall include adverse environmental effects which cannot be avoided should the proposal be implemented, the economic advantages and disadvantages, the relationship between short-term uses of the environment and the

maintenance and enhancement of long-term productivity, and any irreversible and irretrievable commitments of resources which would be involved." *Id.*

It is also clear what the DNR may not do in issuing environmental assessments, including relying on general or conclusory statements of impacts. In a case reviewing an environmental assessment's discussion of wetland impacts from a proposed landfill, the court rejected the DNR's unspecified, hypothetical statements that "proper engineering and operation of the site *should* avoid impacts" to wetland areas and that it is "*unlikely* that site excavation or operation" would affect the wetlands. *Town of Centerville v. DNR*, 142 Wis. 2d 240, 251, 417 N.W.2d 901 (Ct. App. 1987) (original emphasis) (affirming remand to agency for preparation of an EIS). Said the court, "[t]his approach 'leap-frogs' over any analysis of the potential problem or the solution." *Id.* at 251. Thus, not only was the court "left to speculate as to what investigation permitted the [DNR] to reach [its] conclusions," but it did not appear "that the department's expertise has actually been applied." *Id.*

Clearly, WEPA and the DNR regulations implementing it require comprehensive, accurate information about the proposed action and other existing or future actions like it, with a specific focus on long-term viability of the resource.<sup>1</sup> *E.g.*, Wis. Admin. Code § NR 150.22(2)(d).

## 2. The Supplemental EA for the Proposed Wells is Deficient.

The Supplemental EA for the proposed wells is deficient and cannot be finalized as written. *See* Wis. Admin. Code § NR 150.24.

FOCS primarily refers to the attached statements of Mr. Wade and Dr. White to explain omissions and deficiencies in the DNR's analysis, and the applicant's analysis to the extent the DNR relies on it.<sup>2</sup> These statements indicate the DNR has not assessed the environmental impacts of the proposed well in a manner that complies with WEPA and the regulations cited above. This is especially true as to short-term and long-term and secondary environmental effects, including ecologically critical areas like headwater streams and wetlands, NR 150.22(2)(a)1., cumulative effects and their ecological consequences, NR 150.22(2)(a)2., and an evaluation of the probable environmental consequences of the proposal, NR 150.22(2)(d).

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<sup>1</sup> Even where information is costly to obtain, unsettled, or lacking, the DNR must be say as much and provide the best analysis based on the available information. NR 150.22(1)(e), (2)(a)5.

<sup>2</sup> FOCS assumes information submitted during consideration of the initial EA is also part of the DNR's file for the Supplemental EA, and that it is not necessary to resubmit documents provided to the DNR previously.

FOCS also notes the following:

- The Supplemental EA relies on many generalized statements of impact that leapfrog over substantive analysis and fail the *Town of Centerville* test. For example, the wetlands analysis is two sentences long and states only that one inch of drawdown in one wetland is “not expected to cause significant environmental impacts.” (Supp. EA at 3.) The DNR does not state what information it considered in drawing this conclusion, or even what constitutes a “significant” environmental impact in the context of wetlands.
- Modeling was conducted for a 25 year period, but the permit term is indefinite under Wis. Stat. § 281.34(7). The modeling should be revised or the permit approval limited in term to the period of time where environmental impacts were actually assessed.
- Mr. Wade’s report explains that the consumptive use coefficient of 20% used in the SSPA modeling is not explained or justified. It is also inconsistent with the consumptive use coefficients in Wis. Admin. Code § NR 142.04.
- The Supplemental EA does not discuss the precedent-setting effect of the approval, NR 150.22(2)(a)4., the degree of controversy, NR 150.22(2)(a)5., the need for the approval, NR 150.22(b), and proposed preventive and mitigating measures, NR 150.22(2)(c).
- The alternatives analysis is inadequate (Supp. EA at 7-8), simply listing alternatives, choosing one, and nothing more. The DNR did not include “a rigorous exploration and objective consideration of the environmental impacts of all reasonable alternatives” as required by Wis. Admin. Code § NR 150.22(2)(e). For example, to what locations did Richfield Dairy consider relocating wells? What other permit conditions could be imposed that would avoid some environmental impacts, and if other conditions were rejected, why were they rejected? We have seen many instances of negotiations with the DNR between permit applicants regarding proposed conditions (including in this very case, see **Attachment C**), and if these negotiations occurred, the public should know and understand why various permit options and alternatives were rejected.

For these reasons, the DNR must try again to completely and accurately describe the environmental impacts of the proposed high-capacity wells in accordance with Wis. Stat. § 1.11 and Wis. Admin. Code § NR 150.22. Once it does, the DNR should recirculate the EA for public comment.



B. *The DNR Must Conduct a Heightened Review of the Proposed Wells or Deny the High-Capacity Well Approval.*

The agency's needed reconsideration of the high-capacity well permit application under WEPA should also contain additional analyses as required under the *Lake Beulah Management District v. DNR*, 2011 WI 54.

1. The Lake Beulah Decision.

The Wisconsin Supreme Court thoroughly evaluated the DNR's authority over high-capacity wells in *Lake Beulah*, a case where a new municipal well located near a lake threatened groundwater flow to the lake. The municipality had argued the DNR's authority to study, condition, or reject wells was limited to only a certain class of wells specified in Wis. Stat. §§ 281.34(4) and (5) and .35. 2011 WI 54, ¶ 29. The court roundly rejected this argument, finding instead that the DNR could thoroughly evaluate all high-capacity wells, including those pumping between 100,000 and 2,000,000 gallons per year. *Id.* ¶¶ 41-42.

Starting with the Public Trust Doctrine and continuing through Wis. Stat. ch. 281, the court concluded that "for all proposed high capacity wells, the legislature has expressly granted the DNR the authority and a general duty to review all permit applications and to decide whether to issue the permit with conditions, or to deny the application." *Id.* ¶ 39. The court additionally stated,

The high capacity well permitting framework along with the DNR's authority and general duty to preserve waters of the state provides the DNR with the discretion to undertake the review it deems necessary for all proposed high capacity wells, including the authority and a general duty to consider the environmental impact of a proposed high capacity well on waters of the state.

*Id.*

The court also held that the DNR could not turn a blind eye to "sufficient concrete, scientific evidence of potential harm to waters of the state" posed by a high-capacity well. *Id.* ¶ 78. Rather, as trustee of public trust resources, the DNR has a duty to consider such evidence, as informed by the DNR's expertise in water resources management and its discretion. *Id.* In other words, when the DNR knows of harm or a risk of harm, it cannot blindly grant a high capacity well permit with no conditions to protect water resources. *Id.* ¶¶ 40-42. Instead, it has a duty to conduct further study, or condition or deny the requested approval.

2. Evidence Submitted to the DNR Requires the DNR to Conduct Further Study on or Deny the Proposed High-Capacity Well Permit.

Mr. Wade has explained how the applicant's and DNR's analyses understate the wells' projected drawdown of surface waters, and Dr. White has explained the environmental consequences of additional drawdown to area streams. Both also discuss the Supplemental EA's failure to discuss impacts in certain areas like headwater streams and the implications of this failure. The *Lake Beulah* trigger has been satisfied on this basis, at a minimum as to the need for further analysis.

The *Lake Beulah* trigger has also been satisfied because FOCS and others have shown that the cumulative effect of pumping at the Richfield Dairy wells and at other existing and reasonably foreseeable future wells in the region will cause serious environmental impacts. The Supplemental EA states the DNR will not consider cumulative impacts for purposes of issuing high-capacity well permits (Supp. EA at 7), but we strongly encourage the DNR to reconsider this position. We understand that the DNR has based this conclusion on its reading of *Lake Beulah*, which does not address cumulative impacts since such impacts were not an issue in that case, and *State v. Michels Pipeline Constr., Inc.*, 63 Wis. 2d 278, 217 N.W.2d 339 (1974), which simply recognized the right to sue one's neighbor in tort for unreasonable use of groundwater.

We believe the DNR's position is flawed because, *inter alia*, it does not recognize pre-existing authority finding that the DNR's evaluation of impacts to public trust waters must include an assessment of cumulative impacts, e.g., *Hilton v. DNR*, 2006 WI 84, ¶ 28, 293 Wis. 2d 1, 717 N.W.2d 166; *Hixon v. Public Serv. Comm'n*, 32 Wis. 2d 608, 631, 146 N.W.2d 577 (1966), and because it ignores the DNR's charge to protect waters of the state, Wis. Stat. §§ 281.11, .12; *Lake Beulah*, 2011 WI 54, ¶¶ 33-35. There can be no dispute that these water resources are in need of protection: there is hardly a better case study of cumulative impacts than pumping-induced groundwater drawdown in the Central Sands and the impacts of that drawdown on surface water resources and private wells. For the agency to ignore the impacts of other wells when considering applications for yet more high capacity wells is wholly improper.

Finally, to the extent the proposed permit already includes conditions, the proposed conditions are insufficient and internally inconsistent.

- The prior well permit included both an annual *and* monthly pumping limit (131.2 and 21.6 MGPY, respectively), whereas the present permit includes only an annual limit. The draft EA states no rationale for omitting the monthly pumping limit, and removal of this limit could exacerbate the seasonal and drought-related impacts explained in the attached reports.

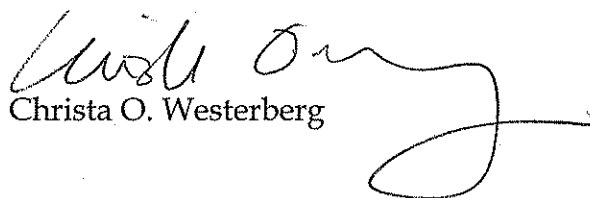
- It is unclear to which wells the monitoring requirement applies: the permitted wells, the monitoring wells required by the WPDES permit, the additional well/piezometer required by the high-capacity well approval, or all of the above? The final permit should clarify that monthly water level information is required from all of these wells.
- The annual limit applies in *any* 365-day period, but monthly monitoring results are only required to be submitted annually. In order to timely ensure compliance with the pumping limit, the final permit should require all monitoring results to be submitted on a monthly basis.

Thank you for the opportunity to submit comments. Please be advised that Friends of the Central Sands reserves the right to submit additional comments and evidence in any future contested case hearings regarding the proposed dairy and the two wells at issue. *Lake Beulah*, 2011 WI 54, ¶¶ 56-57.

Do not hesitate to let me know if you have any questions or need any further information. Thank you.

Sincerely,

McGillivray Westerberg & Bender LLC

  
Christa O. Westerberg

cc: Bob Clarke

**Attachments:**

- A: Comments of Ken Wade, P.E., P.G.
- B: Comments of Ray White, Ph.D.
- C: Various Correspondence Between DNR and Richfield Dairy



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January 2, 2013

Dr. Francie Rowe  
Pleasant Lake Management District  
P.O. Box 230  
Coloma WI 54930

Dear Dr. Rowe:

Per the request of the Pleasant Lake Management District, I have reviewed and offer the following comments on the undated "Richfield Dairy High Capacity Well Supplemental Environmental Assessment – 72.5 MGY."

**General Comments**

1. I found it odd that the Supplemental Environmental Assessment repeatedly asserted that the proposed pumping will not cause "significant environmental impacts" to wetlands, lakes, springs, and streams without ever elaborating on how much of a decline in wetland levels or lake levels or spring flows or stream flows is "significant." Without this elaboration, how would the Department know that the next inch or two of drawdown or tenth of a cfs of stream flow loss is not the one that crosses the significant impact threshold? Allow me to illustrate by example. Suppose an assessment for Pleasant Lake would determine that a 1.5 foot lowering of the long term hydrograph would result in a significant impact, such as the loss of a fish species or other critical habitat. Now suppose that 7 water pumpers each would lower lake levels by 0.2 feet (1.4 feet total), so that the lake is only 0.1 feet above the significant impact threshold. And then an eighth pumper comes into the area, who also wants pumping that will lower water levels by 0.2 feet. This last user would cross the 1.5 foot significant impact threshold, possibly diminishing a critical habitat or fish species. This notion that a level or flow threshold exists at which the next pumper causes a significant impact does not conflict with the Department's assertion that it can only regulate significant impacts from an individual high capacity property.

2. The EA contained several misunderstandings of the modeling performed by SSPA (discussed in detailed comments 1, 2, 3, and 10). The EA misstates that the method used by SSPA to account for existing irrigation pumping impacts was equivalent to that of Kraft et al. 2012a. This is not the case: if the two methods were equivalent, they would have produced nearly equivalent results. They did not. For example, SSPA estimated the existing drawdown at Pleasant Lake at 0.7 feet, substantially less than that estimated from empirical data and modeling by Kraft et al. 2012a. Hence calculations and conclusions about existing impacts on surface waters in the EA should be disregarded.

3. The EA chose metrics for assessing significant impacts on streams in a way that would be unable to define those impacts. Stream impacts were assessed as the amount of discharge diverted at some

historical gauging stations. The problem is that these stations are always located where stream flows are comparatively large, 1 to 35 cfs, whereas pumping impacts will mainly accrue where discharges are small - at the ultimate headwaters of streams where the stream first “wets up.” The EA should have first assessed what the most vulnerable parts of the stream system were, and then developed metrics for gauging those impacts. Instead, it used gauging stations of convenience. The metric by which a significant impact should be assessed is, in my opinion, the fraction of discharge reduced in ultimate headwater stretches, and what length of additional stream (beyond what existing pumping is already impacting) will be dried. This can be accomplished by modeling, and was done in the letter from Kraft to Ebersberger (October 2011) regarding existing pumping impacts to streams.

4. The EA uses “natural fluctuation,” among other things, as the gauge against which additional lake level decline is assessed. No justification nor reference was provided as to why natural fluctuation is a useful standard for assessing environmental impact. The EA ignores this very simple fact: pumping lowers the entire hydrograph – it brings down the lows, it brings down the average, and it brings down the highs. So the same amount of fluctuation may occur, but always at diminished levels. What is important for assessing significant impacts is how a systematic lowering of the hydrograph increases the incidence of undesirable conditions. This is lacking.

5. The EA ignores that Pleasant Lake is not fluctuating naturally, it is under a long term decline due to pumping. Water levels in recent times have been lower than levels during perhaps the most water stressed period in the last 100 years (late 1950 to early 1960s). The Department still has not recognized this reality, predicted in 1970 by the USGS and borne out by more recent reports. The statement of Asplund (Asplund to Greve 2012) demonstrates this lack of recognition: “It is difficult to know how much of this drop in [water] elevation is natural vs. that due to cumulative impacts of pumping.” That this is “difficult to know” is not for a lack of research and communications with the Department. Kraft et al. (2010), in a report to the Department, provided a methodology for assessing water level declines, and showed an average 1.5 ft decline at Pleasant Lake during 1999-2008 due to pumping alone. Kraft et al. (2012a) contained a similar assessment published in a widely distributed international groundwater. The Asplund letter cited a Kraft to Ebersberger communication (October 7 2011) which states “An unbiased estimate pegs 2007 drawdowns at Pleasant Lake at 3.3 feet. An extreme interpretation of the data might conclude that the 2007 drawdown was only 2.1 feet, but a quite reasonable interpretation could also conclude that the 2007 drawdown was 3.8 feet.” A more recent report to the Department (Kraft 2012b, dated October 1 2012 and submitted to the Department around November 1) provided updated assessments of pumping impacts on Pleasant as well as other area lakes.

6. The EA seems to systematically neglect loud and potentially alarming signals of pumping impacts on surface waters. For instance, the EA ignored an apparent great decline of spring flow from the Chaffee Creek spring (specific comment 8, below), and the stark contrast in Pleasant lake levels in 1992 compared with 2005 and 2010 (shown in Figures B4 and B5 in the SSPS report), where the drying of the wetland / bay in the southwest corner is unmistakable.

#### **Detailed comments**

1. Page 2, paragraph 3. “*Model grid spacing ranged from 125 square feet (ft<sup>2</sup>) in the vicinity of the Dairy to 1000 ft<sup>2</sup> near the boundaries of the model.*”

The EA misinterpreted the SSPA report: grid spacing was *125 ft square* to *1000 ft square* ("square" here meaning the dimension of a square on each side) which amounts to a cell size of 15625 to 1 million ft<sup>2</sup>.

2. Page 2, paragraph 3. *"The site-specific model was constructed with model layers for the upper sand and gravel aquifer and for the lower sandstone aquifer."*

To be clear, the model was constructed with *two layers* representing the upper aquifer and one layer representing the sandstone aquifer.

3. Page 2, paragraph 3. *"Pumping from existing irrigation wells was explicitly modeled, with an irrigation water loss equivalent to the 2 inches of "missing water" identified in work by Kraft and others, 2012."*

This statement importantly misinterprets key concepts. Getting to the bottom of this misinterpretation requires some explanation. Note first that the reference provided in the Supplemental EA (Kraft et al. 2012a) says nothing about "2 inches" nor about "missing water." The term "missing water" was used in Kraft et al. 2010, but not in a way that related to a 2 inch "irrigation water loss equivalent."

What Kraft et al. (2012a) and Kraft et al. (2010) actually did was this: (1) statistically estimated a 10-year (1999-2008) average water level decline in monitoring wells and lakes that could not be explained by weather alone (leaving pumping as the only reasonable agent of causation), and then (2) determined how much "net recharge reduction" (only roughly corresponding to a "irrigation water loss") on irrigated land would be required to produce that decline. The decline is termed simply "decline" in Kraft et al. (2012a) and "missing water" in Kraft et al. (2010). But "decline" and "missing water" are NOT "an irrigation water loss," nor is the value two inches! The statistically-estimated 10-year average declines varied with monitoring well and lake location, ranging up to 3.6 feet at Huron Lake (it was 1.5 feet at Pleasant Lake).

"Net recharge reduction" on irrigated lands (perhaps getting to the point of the EA's "water loss") was produced using groundwater flow modeling. Effectively, the groundwater recharge rate on irrigated lands in the model was diminished until modeled declines matched the statistically estimated average 10-year declines. The net recharge reduction on irrigated lands IS in the neighborhood of 2 inches.

Setting aside issues of misconstruing "missing water" with "net recharge reduction," the "irrigation water loss" calculated in the SSPS report was not equivalent to the approach used by Kraft et al. (2012a). SSPA simulated irrigation pumping stresses (perhaps the same as what the Department means by "irrigation water loss") thusly: "Each of the high capacity [irrigation] wells was pumped at a rate reflecting 20 percent consumptive use relative to baseline conditions." The consumptive use was apparently calculated as 20% of the median reported pumpage of 425 wells in the model domain between 2007 and 2011.

Two problems accrue here.

First, the estimate of median pumping rates is prone to error due to missing or erroneous pumping reports, a problem that DNR has recognized and is trying to improve. Second, the 20% of the median pumping rate as the "consumptive use" is given without justification. It seems predicated on an incorrect notion that "Much of the applied irrigation water infiltrates back to the groundwater table as a result of the coarse-grained soils..." (SSPA, page 4), a statement with no basis in the irrigation scheduling literature

for the central sands (growers strive for zero infiltration to the water table). The only potential documentation that I saw for the 20% figure is in a footnote (SSPA, page 15) that states "Twenty percent consumptive use is consistent with the application of 10 inches of water to the fields and increased evapotranspiration of 2 inches." While the statement is tautologically true (20% of 10 is 2), the EA provided no evidence that it should apply here - the SSPA report did neither demonstrate that the median pumping rate has equivalence to an irrigation depth of 10 inches, nor justify a 20% consumptive use. If this footnote is what the Department was using to show "equivalence" of SSPA and Kraft et al. approaches, it could be correct only by coincidence or by contriving irrigation depths and percentages that happen to fit.

The upshot is that the SSPA approach described here may be prone to error in estimating the steady-state effects of existing pumping and the incremental effect of the proposed pumping. (The SSPA approach probably has little effect on estimating the discrete impact of the proposed pumping in isolation.)

The possibility that the SSPA approach results in error is indicated in the SSPA report (page 15): "The calculated [modeled] long-term water drawdown from baseline conditions [irrigated pumping compared to nonirrigation]... in the vicinity of the Richfield Dairy is about 2.8 inches, and the long term change in the water level in Pleasant Lake from baseline conditions [due to current irrigation pumping] is approximately 0.7 feet..." The modeling approach of Kraft et al. 2010, documented for instance in the letter from Kraft to Ebersberger (October 7 2011) calculated a drawdown of 2.1 feet compared to the SSPA 2.8 inches for the vicinity of the Richfield dairy. "Inches" in the SSPS report could be a typographical error (i.e., feet should be substituted for inches), but even if this is the case, the difference between the two is not negligible. The very low estimate (0.7 feet) of existing drawdown at Pleasant Lake is more problematic, as it does not compare well with the Kraft et al. 2012 modeling approach, nor to empirical estimates of drawdown at Pleasant Lake. I would discount it as inaccurate.

4. Page 2, paragraph 4. *"The site-specific model was run under background conditions (no pumping), current conditions (pumping from all existing irrigation wells), and existing irrigation pumping plus 72.5 MGY withdrawal from the Dairy."*

Because of comment 3 the "...current conditions (pumping from all existing irrigations wells) ..." may be inaccurate.

5. *"Model results were reported at 5 and 25 years of operation. After 25 years, the modeled system had equilibrated until groundwater drawdown was no longer increasing significantly with time (see graph of Pleasant Lake drawdowns over time, p. 17 of SSPA)."*

It seems odd and incorrect that this analysis would be truncated at 25 years if the applicants intend to run the dairy facility effectively in perpetuity. Why not take the calculations to steady-state (long times)? Granted, the figure on the top of page 17 shows Pleasant Lake may be close to a steady-state after 25 years, perhaps only increasing a few tenths of an inch more. But impacts to other water bodies may be more severely underestimated using this approach.



6. Page 3, paragraph 2, Private wells. *"In almost all cases where private wells have been constructed in accordance with the state's well code, water table drawdown of less than five feet will not cause significant impacts to private wells."*

No basis was provided for this statement. I suppose it depends what is meant by "In almost all case..." Does this mean 80%? 90%? 99%? I'm not sure. This statement does not consider that the water level in a well will be determined by natural fluctuations, on top of which existing drawdowns bring water levels lower, on top of which the new proposed wells bring them lower still.

7. Page 3, paragraph 4, Wetlands. *"The nearest mapped wetland is approximately 1.5 miles northwest of the proposed wells. The expected drawdown from the proposed wells at this wetland would be less than one inch after 25 years of pumping at the maximum proposed pumping rate (72.5 MGY), and this is not expected to cause significant environmental impacts."*

Once again, calculating a 25 year decline when the wells are expected to essentially pump in perpetuity makes no sense. The Department has not set a water level threshold for when a "significant impact" will occur in this wetland, so how can the EA be certain that such a threshold will not be crossed by this pumping?

8. Page 3, paragraph 5, Springs. *"A large spring is located 3.5 miles east of the proposed well site, at the headwaters of Chaffee Creek. The Wisconsin Springs Inventory identifies the spring's flow as approximately 2 cubic feet per second (cfs), measured in August, 1963. In July of 2003, flow at a monitoring station roughly 3800 feet downstream of the headwater spring was 1.2 cfs."*

It would seem to me that the Department would have concerns about flows at the spring being diminished from 2 cfs in 1963 to 1.2 cfs in 2003, at a location some 3800 feet downstream of the spring where larger flows would be expected. Weather does not seem to be a good explanation – conditions around 1963 were not appreciably wetter than 2003, and likely were drier. So first blush evidence would throw a caution that groundwater pumping may already be having an impact at this spring.

9. *"Modeling results confirm that flow reduction is expected to be around 0.05 cfs (Chaffee Creek gaging station 1 mile downstream of the headwater spring), or less than 5% of the spring's flow. The proposed wells are very unlikely to cause a significant decrease in flow from the spring and are not expected to have a significant environmental impact on the spring."*

It makes no sense to assess the impacts on the spring at a location 1 mile downstream of the spring instead of at the spring itself. Similar to the comment above about wetlands, the Department has not shown how it knows the proposed pumping will not cause a "significant" impact threshold to be crossed, because it has not made a determination of that threshold.

10. Page 4, Streams. *"The SSPA model evaluated the impacts of the proposed wells on stream flows at gaging stations within the model domain on Little Roche a Cri Creek, Fordham Creek, Chaffee Creek, Tagatz Creek, Campbell Creek, Neenah Creek, Lawrence Creek, Carter Creek, the Mekan River,*



*Schmudlack Creek, and the South Branch of Wedde Creek. The maximum modeled flow reduction was 0.10 cfs (43 gallons per minute) in Little Roche a Cri Creek at 10th Ave."*

The analysis for streamflow impacts searches for the impacts at the wrong location. The EA chose to evaluate streamflow impacts where streamflows are comparatively large, between 1 and 35 cfs. Apparently they did so because it happens to be the location of where some stream measurements were taken in the past. The EA should have first asked what the most important metric for a significant impact would be and then develop a method to look at that impact. Significant impacts would be likeliest to accrue in the ultimate headwaters of the stream, i.e., where they first wet up and where discharges are small. The metric for evaluation of impact should be, by what fraction will discharge be reduced in the ultimate headwaters, and how much additional stream length will be dried? Methodology for doing this analysis was provided in the letter from Kraft to Ebersberger of October 2011.

11. *"At flow reductions of less than 4%, even sensitive stream types do not typically experience observable changes in fish populations (Hamilton and Seelbach, 2011). The expected flow reductions due to the proposed Dairy wells are unlikely to cause a significant environmental impact to the streams."*

The Department seems to be asserting a 4% flow reduction is a measure of significant environmental impact; let's allow that assertion. As the Kraft to Ebersberger letter demonstrated, existing pumping is already drying stream headwaters. Additional pumping will extend the length of dry stream, and decrease downstream discharges further. The Department has not shown how much additional headwater may be dried by this pumping, and how much more stream will have a 4% streamflow reduction from baseline conditions.

12. *"The site-specific SSPA groundwater model indicates that 25 years of pumping at the maximum proposed withdrawal amount of 72.5 MGY would result in  $1.6 \pm 0.26$  inches of drawdown to Pleasant Lake."*

The " $1.6 \pm 0.26$  inches" should not be misconstrued as the ultimate potential error in the estimate of drawdown at Pleasant Lake (the Asplund to Greve memo seems to interpret it this way). It is the measure of model prediction uncertainty. Nonetheless the 1.6 inches is a fair estimate, and it is almost certainly accurate to within a factor of two.

13. Page 4, Lakes. *"This change is small relative to the historically recorded 5.5-foot variation in water level."*

Comparing the impact of drawdown on a lake with the so-called natural variability has no basis that I can see for evaluating a significant environmental impact. The Department needs to fathom that groundwater pumping lowers the entire hydrograph –the highs are lower, the average is lower, and lows are lower. The increased frequency of lows and diminished highs should be the basis for evaluating an impact.

The EA ignores that what is going on at Pleasant Lake is not variability, but a trending decline. The amount of decline due to pumping could be around 3 feet since the mid 1990s (Kraft letter to Ebersberger October 2011, Kraft et al. 2012b). This pumping new adds to that decline.

14. *Overall, the impacts of the proposed wells on Pleasant Lake are likely to be insignificant, especially compared to the natural variability in lake level, the impact of existing shoreland development and lake use, and the cumulative impacts of existing pumping in the vicinity of Pleasant Lake.*

Once again, the Department has not made a determination of what level of drawdown crosses the significant impact threshold, whether that threshold has been already crossed, or will be crossed with this new pumping.

15. Page 6, cumulative impacts. *"Modeling by Kraft and Mechenich (2010) shows an average water table drawdown of 1.5 feet at Pleasant Lake..."*

More importantly than the modeling evidence is that the empirical monitoring data showed an average water table drawdown (1999-2008) of 1.5 feet. Modeling closes the loop by showing that this drawdown is explainable by 2 inches of net recharge reduction on irrigated lands. More crucial than the average is that drawdown is apparently increasing, with recent drawdowns of 3 feet or more (Kraft et al. 2012b).

16. *"... and streamflow reductions of 1.5 - 15% in headwater areas of nearby trout streams. This is attributed to water "missing" due to irrigation."*

This statement underestimates pumping impacts. Kraft et al. 2012a showed 30-44% discharge baseflow declines 2 km from stream sources, and modeling results communicated by Kraft to Ebersberger (October 2011) demonstrated pumping is drying stream headwaters.

17. *"The SSPA site-specific model also calculated impacts due to the cumulative impact of irrigation pumping. Irrigation pumping from area high capacity wells was calculated to have depressed the water level in Pleasant Lake by 0.7 feet..."*

This water level depression is substantially less than what is supported by empirical observation, and may be due to incorrectly simulating the effects of irrigation pumping (see detailed comment 2). It should be discounted.

18. *"...and reduced flow in nearby trout streams by 3-6% (0.5 - 1.8 cfs). Some streams within the model domain were calculated to have flow reduced by higher percentages (up to 41%) due to existing irrigation pumping."*

The origin of this 3-6% estimate within the SSPA report is unclear. If it refers to Table 1, it should be noted that the 3-6% refers to places where streamflow is relatively large and a pumping impact would be small. Neither the 3-6% estimate nor the "higher percentages" elsewhere shed light on the impacts to the most vulnerable part of streams at the ultimate headwaters. This is a flaw.

19. Page 7. *"However, when DNR determines whether or not to approve an application for a high capacity well, DNR is limited to considering whether the proposed well or wells on the high capacity property may cause significant adverse environmental impacts. In this case, as described above, the*

*Department's assessment of the available information is that the proposed wells are not likely to cause significant adverse environmental impacts."*

What is striking to me is the Department never states what the threshold is for a significant environmental impact at any of the water bodies. How would it know if this particular development is the one that crosses the threshold?

20. Page 8. *The Department will require ongoing water level monitoring and reporting of results from monitoring wells on site.*

*Monitoring of groundwater levels near the proposed high capacity wells is required to confirm the model results.*

*As part of the high capacity well approval, the applicant must also install a minimum of one additional piezometer nested with a monitoring well downgradient of the high capacity wells.*

It seems the Department's intention is to install and monitor wells to "confirm the model results." The Department does not say how the model results will be confirmed, just that monitoring wells will be installed and then something will happen, at which point we'll know if the model results are confirmed or not. There are many open questions here - how will water levels be used to confirm the model? How will the drawdown signal be resolved from year to year variability, or the effects of adjacent wells? How will the monitoring well results inform on how well the model predicts streamflow depletions and lake level declines? My view is that installing a few nearby wells will be futile for the purpose of confirming model results. The Department needs to do something much more detailed than requesting a monitoring well or two if it wants to "confirm the model results." A lot more thought into this is needed.

Sincerely,

/s/

George J. Kraft, Ph.D., PH  
Professor and Director

## **References**

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January 7, 2013

**VIA EMAIL (RACHEL.GREVE@WISCONSIN.GOV)  
AND U.S. MAIL**

Ms. Rachel Greve, DG/5  
Wisconsin Department of Natural Resources  
101 S Webster Street  
P.O. Box 7921  
Madison, WI 53707-7921

Re: Richfield Dairy Supplemental Environmental Assessment  
Public Comments

Dear Ms. Greve:

On November 27, 2012, the Department of Natural Resources (WDNR) issued public notice and made available for public comment a proposed Supplemental Environmental Assessment (SEA) and a technical groundwater modeling report generated by S.S. Papadopoulos & Associates, LLC (SSPA) in support of Richfield Dairy's high capacity well permit modification request. WDNR relied on the SSPA report in performing the technical analysis reflected in the SEA. On behalf of Richfield Dairy, this letter provides comment on the SEA.

In its current form, the SEA provides more than sufficient technical support for the approval of the high capacity well permit modification request, and the Department has fully complied with its obligations under the Wisconsin Environmental Policy Act (WEPA). The SEA further provides more environmental impact review, consideration and analysis than is required for WDNR to process and approve Richfield Dairy's well permit modification request. Indeed, the technical analysis in the SEA and the SSPA report fully support the Department's conclusion that the proposed high capacity wells will not result in any significant impact to the environment. As such, Richfield Dairy's high capacity well permit modification request should be granted as soon as possible.<sup>1</sup>

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<sup>1</sup> The public notice and comment period for the SEA was originally scheduled to close December 28, 2012, but was extended until January 7, 2013. We understand the extension request was made by an attorney representing parties currently challenging the prior-issued Richfield Dairy high capacity well permit and WPDES permit. We further understand that the basis for the extension request was that bad weather and the holiday season prevented the parties' expert consultant from adequately reviewing and commenting on the SEA. As indicated above, a large portion of the technical analysis in the SEA is based on the SSPA report, which was provided to all parties to the litigation in July 2012. All subsequent technical information and documents concerning the well modification request were also provided to the parties coincident with submittal to WDNR, as were related correspondence

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The SEA and the WDNR Record Are More Than Sufficient to Satisfy WEPA.

WEPA requires WDNR to undertake an environmental review prior to taking an agency action. The scope of environmental review for particular actions is generally dictated by Wis. Stat. § 1.11, as well as Wis. Admin. Code chapter NR 150. Pursuant to §NR 150.03(8)(h)(1), the issuance of a high capacity well permit is typically a Type IV action which generally “do not require the EA or EIS process, do not require a news release, and are otherwise exempt from the procedural requirements of this chapter.” See NR 150.20(1)(a). In this case, an environmental review was undertaken for the high capacity well permit application because WDNR determined that the well application was related to the dairy’s WPDES permit application -- a Type II action which requires the agency to generate an Environmental Assessment (EA).

As noted in the SEA, the EA generated by WDNR for the Richfield Dairy was and continues to be the subject of administrative and judicial challenges. In 2012, a Dane County Circuit Court judge concluded that the EA generated by WDNR for the Richfield Dairy withstood all of the technical challenges raised by the challengers in the judicial review action, with the single exception that WDNR failed to evaluate impacts from the specific pumping volume approved by the agency. Because Richfield Dairy had already requested its approved pumping limit be reduced from 131.2 million gallons per year (gpy) to 72.5 million gpy, WDNR generated the SEA to satisfy the court’s request for an updated EA and to inform its decision on the requested permit modification request.

In an overabundance of caution, to protect its investment to date, and to ensure the high capacity permit modification would overcome and render moot any meritless administrative and judicial challenges, Richfield Dairy provided WDNR with hundreds of pages of technical analysis concerning the proposed pumping volume of 72.5 million gpy. All of those documents, reports and correspondence are included in the WDNR record which demonstrates an exhaustive review was undertaken to evaluate potential impacts of the Richfield Dairy high capacity wells. Neither the extensive (and expensive) analysis generated by Richfield Dairy nor the exhaustive review performed by WDNR are required by any existing statute or promulgated administrative code provision. Indeed, the efforts of both Richfield Dairy and WDNR are well above and beyond what the legislature deemed is required for the application or issuance of the proposed high capacity well permit. See Wis. Stat. § 281.34, Wis. Admin Code § NR 150.03(8)(h)(1), chapters NR 812, 820.

The SEA and the hundreds of pages of technical analysis included in the WDNR record clearly demonstrate that the proposed wells will not result in any significant negative impact to the environment.

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between Richfield Dairy and WDNR. Based on the above and the fact that the SEA had already been publicly available for 30 days when the extension was requested, our view is that the extension of the comment period was not based on any technical need or scheduling problem, but instead was just another way for the litigants to cause further undue delay in the permitting process for the Richfield Dairy.

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## Technical Comments on the SEA

The following comments are related to the SEA itself and provide correction or clarifications.

Page 2, second full paragraph: The most recent pumping data is the most relevant for purposes of comparison between the existing irrigation well and the proposed dairy wells. From 2007 through 2011, the average pump rate from the irrigation was 46.5 million gpy, which is 64% of the pump rate requested by Richfield Dairy. As such, the paragraph should read, "Based on pumpage reported for the years 2007-2011, 72.5 MGY is roughly 33% more than the amount of water that was previously pumped for irrigation purposes."

Page 2, third full paragraph: The model grid spacing measurements should be in feet (ft), not square feet (ft<sup>2</sup>).

Page 2, third full paragraph: The term "missing water" should be replaced with the term "consumptive use."

Page 4, first full paragraph: Fordham Creek is 4.5 miles west-southwest, not southwest.

Page 4, third full paragraph: There is a reference to "Novitski & Devaul; House," but there is no corresponding "House" included in the reference list at the end of the document.

Page 6, second paragraph under Cumulative Impacts heading: Irrigation pumping from area high capacity wells was calculated to have depressed the water level in Pleasant Lake by about 2.7 feet, not 0.7 feet. The original report contained a typographical error, which was corrected by email to WDNR on September 11, 2012.

Page 6, second paragraph under Cumulative Impacts heading: The sentence should be revised as follows: "Some streams within the model domain were calculated to have flow reduced by higher percentage than calculated by the Kraft Model (up to 41%) due to existing irrigation pumping."

Page 7, carryover paragraph: The SEA references information provided by Kenneth Wade, but there is no corresponding reference in the list at the end of the document.

As noted above, the 10-page SEA provides more than adequate information, analysis and consideration to satisfy WDNR's WEPA duties as provided by statute and promulgated administrative code. The SEA also serves to satisfy the directive from the Dane County Circuit Court, and should only be modified to address the technical items noted above.

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& FRIEDRICH LLP

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We appreciate the opportunity to provide comment on the SEA. Please contact me if you have any questions or comments concerning the information provided herein.

Sincerely,

**MICHAEL BEST & FRIEDRICH LLP**



David A. Grass

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